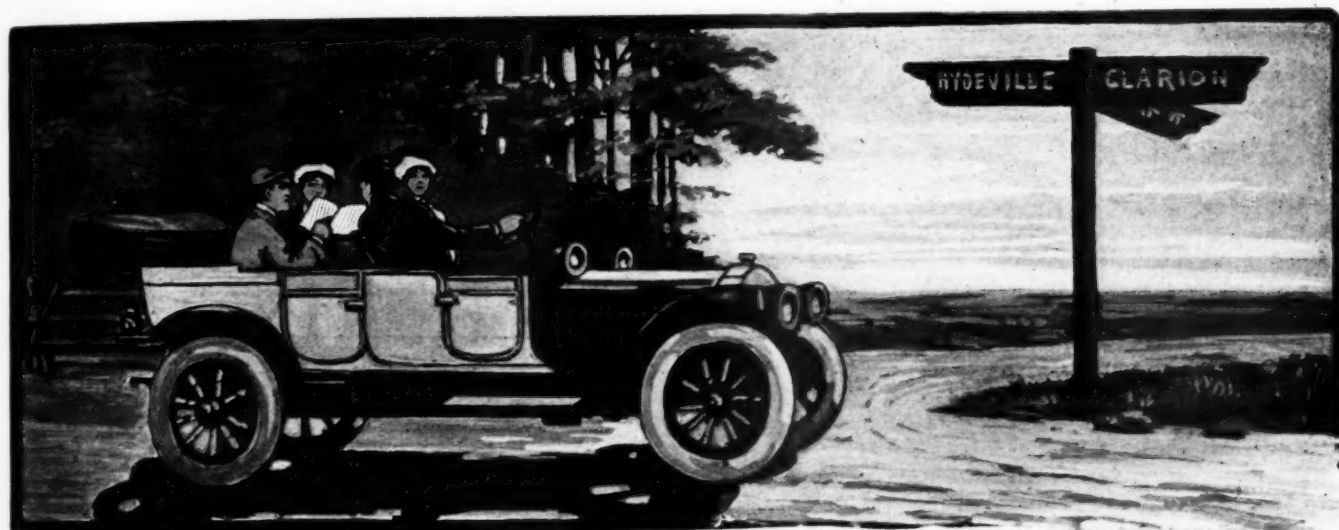
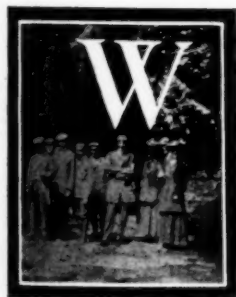


THE AUTOMOBILE

Road-map and Route-making; Once Haphazard, Now Art



AT THE PARTING OF THE WAYS: WHICH ROAD?



WHEN the automobile tourist prospects new fields he depends largely for his directions upon his road map and route notes and instructions. Such a map seems ridiculously simple to the uninitiated, but in reality it is one of the most complex products affiliated with the automobile industry. The making of such a map involves large amounts of money, great skill and discrimination and the operation of a detailed system in every particular and department of the work.

Touring information used to be gathered on a hap-hazard basis. Sometimes it was valuable and sometimes it was not. Sometimes it resulted from actual experience, but oftener it carried a factor of uncertainty where the map-maker was obliged to rely on unofficial information as to the whole or a portion of a route.

Today the case is widely different. The route is carefully covered and observed, copious notes being taken of each route characteristic; mileages are checked by precision instruments and after the notebook is turned in the map-maker plots the information contained and the route-maker reduces the information to tabular form and includes the finished product in the route book that now forms a part of the equipment of almost every adequately furnished automobile.

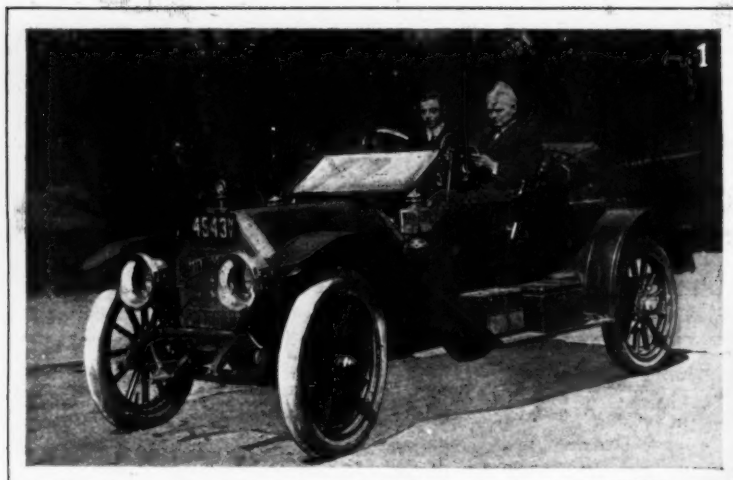
In making a map or mapping a route the procedure is approximately as follows: The automobile used is generally a powerful runabout, equipped with baggage accommodations sufficient to care for two suit-cases and a hand-bag. While an effort is made to work in fair weather, the crew on a map-making trip cannot always choose and as a consequence the traveling outfit includes very complete waterproof outfits.

The car is fitted with speedometer and odometer of approved pattern, special stress being always laid on accuracy under varying conditions of road and weather.

Suppose that the territory to be covered includes a map-making run from New York to Prunty's Corner, Pa. If the start is from Columbus Circle the odometer is set at 0 and the mileage for the map is taken at each turn. In the accompanying cut, showing the touring routes through Bridgeport, Conn., the general plan for crossing any city is outlined.

The best route between any given points has to be determined by actual travel and the automobile road map of all cities is constructed on similar lines to the one shown. The heavy black lines indicate the best road to follow; the lighter lines show alternative and less desirable routes, while the finer lines show streets that may be traversed, but should be avoided for various reasons. These reasons include width, distance and pavement.

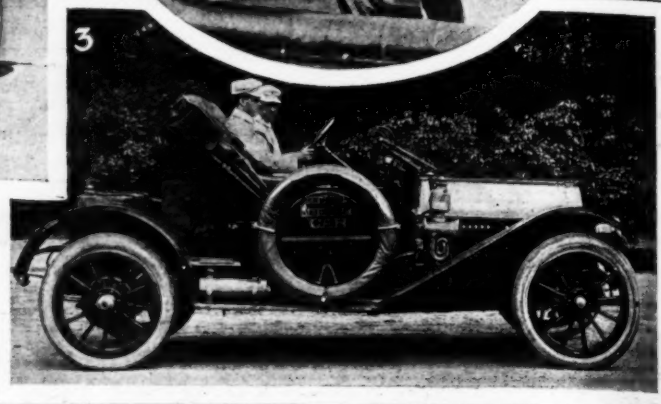
In numerous routes starting at New York, the commencement is from a central point in the city, but there are many others that start from the various ferries. If the whole route is new, the work of laying out a plan to reach a certain ferry



1—Noting a left turn while exploring a new road route

2—Sometimes it is necessary to check observations while en route

3—Businesslike equipment of one of the crews devoted to map-making



involves much painstaking care, but usually it is easy to get directions. City map-making is largely outlined by street directions and odometer mileages.

Having crossed the ferry and started away toward the terminus of the route, the work of the map-maker really begins.

He sits at the driver's side and indicates the roads to be followed. In his hand is a notebook, while a compass, conveniently installed, gives him his directions. The notebook is arranged like a school geography with south at the bottom of the page and north at the top. If the course is due west, which would carry the route across the page from right to left, a small arrow is placed in the center of the page to show the relative direction so that more miles can be shown on a single page. The notebook is ruled and, roughly speaking, the space between the lines represents 1 mile.

The man who takes the notes has his hands full from start to finish. He must observe every cross-road, every branch, the character of the road traveled, railroad crossings, bridges, fords and toll-gates.

When approaching a fork in the road he must note the mileage, and, assuming that the route keeps to the right at the fork, he notes opposite to mileage "Keep Right." Every material change of direction is noted, except where the road winds and turns without being branched or crossed.

The note "Bear Right" means a slight change in direction to the right at a fork or other salient point on the route.

Turn sharp right or left means a change in direction of 90 degrees. Ordinarily an expert map-maker can take accurate notes while the car is traveling at the speed limit. It is recorded that one expert often covered as much as 225 miles in a day and turned in notes from which mathematically exact maps were constructed. Such a speed, however, is extraordinary in this work, as it means an average of 25 miles an hour for 9 hours, which, of course, makes the maximum speed range well over 40 miles an hour.

Map Makers Cannot Make Speed, Too

At 40 miles an hour it takes a well-fitted map-maker to note the road marks, changes in direction and salient landmarks. Likewise, it is not always the crew that makes 40 miles an hour that gets home to dinner first. As a matter of fact, such speed is frowned upon by peace authorities in some localities and it has been recorded that a few swift map-makers have been embarrassed by running into log chains stretched across the road by indignant and needy constables to whom it made no difference whether the occupants of the car were map-makers or ordinary tourists.

The average crew finds that 15 miles an hour, which makes a maximum speed of 25 miles an hour necessary at times, is about the limit.

Long experience shows that road directions should be carried in a map and its accompanying road notes at least once in a mile. In more remote territory than that in the eastern section of the country, roads extend for many miles without being crossed, but in the East there are few spots where directions should not be given every mile.

The cut showing the west half of Long Island will illustrate the scope of district map-making for the use of tourists.

All the Roads Must Be Explored

In virgin territory, where map-makers must also act as explorers, the rate of progress is of necessity much slower than it would be on Long Island, for instance. Where two roads exist between certain points, it is always considered necessary to explore both. In making a selection, the road is given preference that covers less distance, providing that the road itself is as good as the longer. If the long way contains points of scenic beauty or historic interest not passed on the short route it may be included on that score, despite the greater mileage, but in arranging direct routes the matter of distance is of prime importance.

In such cases it is conceivable that a whole day might be spent in plotting 30 miles or less.

A nice discrimination must be used in selecting and recommending hotels and garages for the accommodation of tourists, and such selection is not one of the least of the responsibilities of the route-maker. He is usually chary of the use of adjectives.

One excellent reason for the general desire of such crews to work in fair weather can be seen from a glance at the notes of a route-maker taken during a rainstorm. It is impossible to carry a long series of mileages and road notes in one's memory when traversing an unfamiliar country, and, consequently, the notes must be made at the time the cross-roads are passed or the red school-house looms into view on the right. Otherwise an error might creep into the route directions that would land tourists in Podunk, when they thought they were headed for Prunty's Corner. In a driving rain, moving along at from 15 to 25 miles an hour, such notes are difficult to make with the same degree of accuracy that would obtain under a sunny sky.

The crew that can cover 150 miles in a day is 100 per cent.

efficient, and if the week's work totals 400 miles there can be no fault found on the score of industry. It is likely that the average week's work during the season will not run over 300 miles of actual route-making. This of course, takes bad weather into consideration.

When the crew reaches the end of the proposed route, the notebook used by the map-maker is mailed back to the central office and in due course it is worked over by the force at the office.

Working the Road Data Into Shape

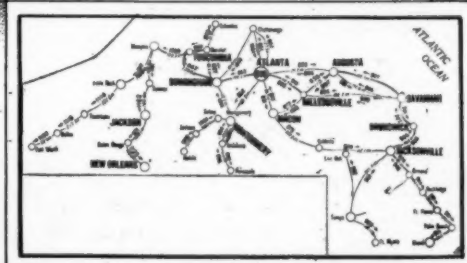
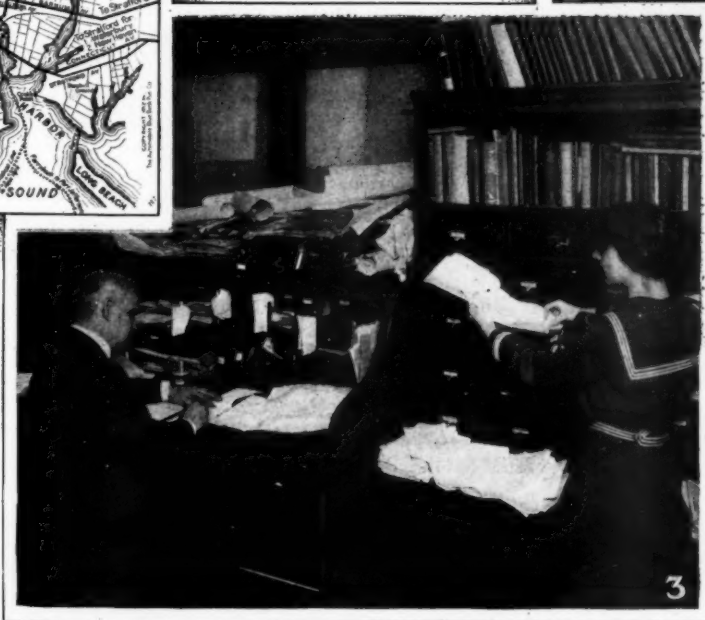
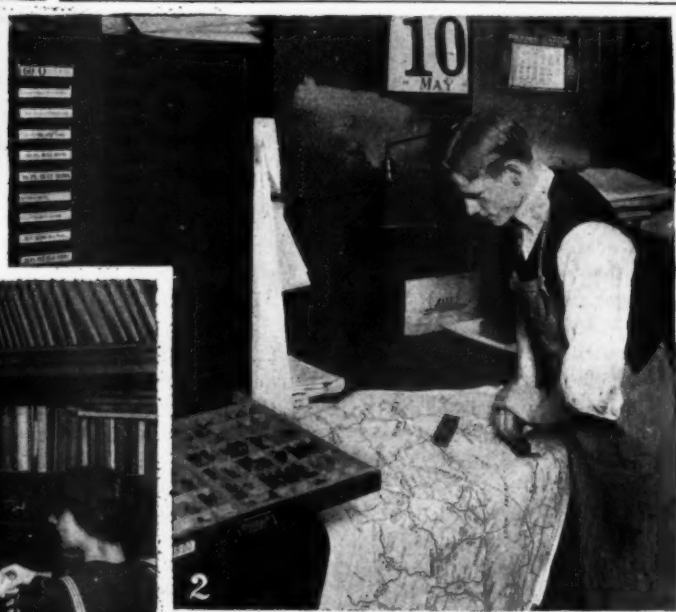
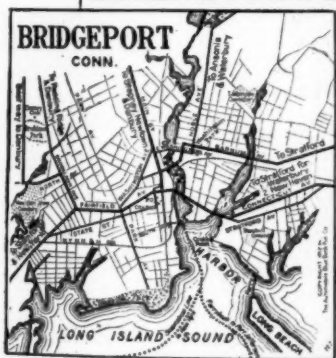
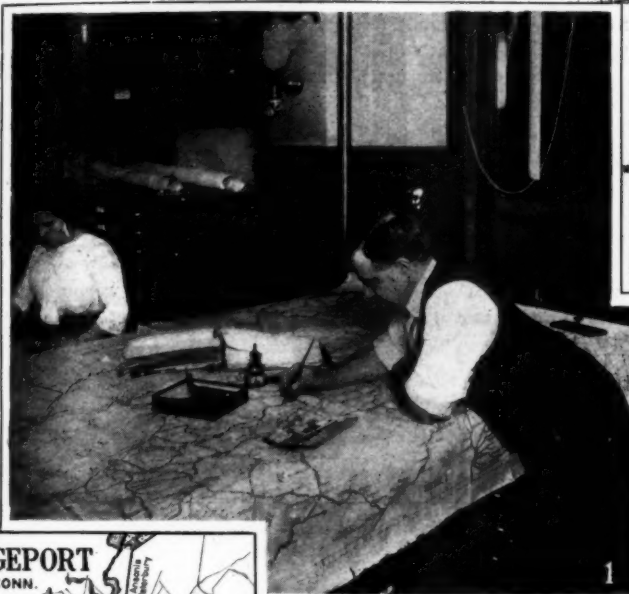
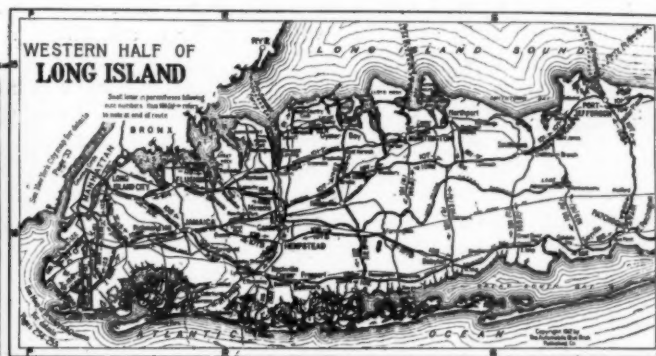
This process begins with inspection and examination of notes. When these have been approved the book is turned over to the draughtsman. He takes a map of the district, usually one manufactured by the government or a reproduction of such a chart. The route followed is marked in on the map, following the distances and directions given in the notes. If the map is approximately exact, if the odometer is accurate and the route-maker has done efficient work, the draughtsman ex-

periences little difficulty in lining out the route. It is a tremendously painstaking and laborious task at the best, but it is astonishing how quickly and accurately the rough notes can be transcribed into an illuminating map.

Checking over the distances is a detailed job requiring physical and mental labor, but it has to be done over and over in order to insure certainty and to eliminate chances of error.

The draughtsman's work may occupy any length of time over a day or two. When he has finished, the map bears a broad line that corresponds with the data contained in the notes. The numbering and lettering are neatly done and the finished map is handed to other draughtsmen who trace out the course on semi-transparent paper. The final notations are made on the tracing paper and the drawing is prepared for the engraver.

In the meantime the road directions are being tabulated and arranged so that tourists may be able to use them with speed and certainty. A good road-route of 100 miles will generally



1—Marking in the selected roads in preparing map for engraver. 2—How the details of marking and identification are handled. 3—Offices where the records are tabulated and where the editing is done. (Specimens of district, section and city maps are shown)

necessitate the use of from three to five, or even six, pages. Owing to the fact that an individual map for each route in a certain section is manifestly impossible on account of mere bulk, the map is included in the sectional chart arranged for easy reference. The road directions and mileages are given in full for each separate route.

In the approved type of tabular directions the total distance from the start to any point is given, and, in another column, the intermediate distances between the various prominent landmarks noted.

Those who have tried it have found that it is abominable to attempt to travel over a route, using directions that read in the reverse.

In order to obviate such vexations of spirit and impromptu mental arithmetic as follow the readings of a reverse road-route, the map-maker does the work in advance. A curious fact has been noted by tourists generally: that by traveling over a certain route in the reverse direction the impression is given of an entirely new road. Viewed from the other side, the landmarks have a different appearance and the towns, rivers, lakes and hills seem dissimilar and unfamiliar.

Take, for instance, in this respect, the road between Suffern, N. Y., and Pompton Plains, N. J. Viewed from the north the hills are on the right and the valley reaches away ahead of the car; while going in the opposite direction, the hills most closely approached are also to the right and the road seems to be climbing practically all the way. Still the roads are identical.

The illustration on page 1155 shows how it is possible for a party to follow back along a road passed over the same day and fail to recognize it as the same road. Such incidents are likely to happen where a mistaken fork carries the party off its course and circles around, rejoining the main road at a point where no road sign, or identifying mark, is handy.

The case of a well-known New York automobilist is some-

times cited in this regard. It appears that he tried to go from Newark to Lakewood and succeeded only in circling about the former city for 4 hours. The road map has been devised to prevent such happenings.

When the text of the route has been arranged and the map made, the whole is embellished with descriptive notes calling attention to some of the salient facts concerning the district, the character of the roads and other information, all of which is appended to the route.

But experience has taught that only a small percentage of automobile tourists ever make exclusive use of the New York and Prunty's Corner roads, or wherever the outer terminus of the route is placed. They may want to go farther, or they may wish to cover only a small portion of the distance, or they may join the route at any intermediate point. Some of them may not wish to stay overnight at the end of the published route. For this reason all the routes in a certain district are combined in one sectional map or key chart which carries numbered references to the various roads described in the detailed notes.

This gives the tourist a bird's eye view of a whole section and makes it easy for him to determine how to reach any objective point within the section.

In such charts the mathematical scale is not closely followed, but the road distances are also noted with great accuracy.

The accompanying chart shows a section of the South, where good roads are rather infrequent, but where some excellent roads can be found. The advantage to the tourist in being able to tell at a glance how to reach a certain point by several routes can be readily seen.

The whole process produces valuable maps and data for tourists, but each of the numerous steps required involves an infinite amount of labor in addition to skill, discernment and discrimination.



Suburban Bus Lines for Capital

WASHINGTON, D. C., May 20.—Using a 25-passenger Wilcox truck the Semmes Motor Line has been organized to run a passenger service between Washington, D. C., and Brandywine, Md., a distance of 17 miles. The route is through a rich farming country and is not now served by either steam railroad or trolley. If the traffic warrants, the promoters will add other machines and will gradually extend the route until it covers Marlboro and Leonardtown, Md. A freight service, in which Wilcox trucks will be used, will also be inaugurated. A regular schedule will be maintained, two round trips being made each day. It is expected the service will be started June 1. Business houses in Washington desirous of building up a trade in that section of Maryland covered by the proposed service are taking a great deal of interest in the project. Charles H. Semmes, who handles the Wilcox truck line in Washington, is the moving spirit in the enterprise.

A motor bus line in which White trucks are used, has been established in Rock Creek Park, Washington, D. C., by the Imperial Motor Co., White agents in that city. The park is one of the finest of the kind in the country and lies on the outskirts of the national capital. Heretofore it has been inaccessible to all except motorists or those owning horses and carriages, but the installation of the motor bus line will open it up to the general public. The bus will make hourly trips between 8 o'clock in the morning until 11 o'clock at night and the service will be maintained regardless of what the weather conditions may be.

More Motor Apparatus for Hub

BOSTON, MASS., May 18.—As a result of the passing of the appropriation of \$50,000 for fire apparatus by the City Council this week Fire Commissioner Cole and Mayor John F. Fitzgerald have been looking over the vehicles in the large cities so that they may select the most available ones for use in Boston. Commissioner Cole has already decided upon the number of motor vehicles he will add to the department to supersede the horse-drawn vehicles.

The first batch will comprise three combination motor ladder trucks, three combination hose and chemical wagons and seven automobile runabouts for district chiefs. This will make 20 pieces of motor apparatus in use by the fire department.

Bids for the new apparatus will be printed in the *Boston City Record*, the municipal paper issued by the city, and to which city bids are all confined.

BOSTON, May 18.—Secretary Chester I. Campbell of the Boston Automobile Dealers' Association has picked out Tuesday, June 11th, as the day on which to have the annual outing for the blind, crippled and orphaned children of Greater Boston. As usual, the trip will be to Sharon.

PHILADELPHIA, May 18.—It appearing unlikely that the Fairmont Park road race will take place this year, officials of the Quaker City Motor Club are concentrating their activities on the meet to be conducted by the club on Saturday, June 8, at the Belmont Driving Park, Narberth.

Simplex Stars at Denver

Driven by Disbrow, It Breaks 5-Mile Local Track Record and Nearly Equals Mile Figures

DENVER, COL., May 20—Denver's first race meeting of the year opened Saturday for a 2-day session at Overland Park in the presence of 3,000 people. The Case team was the main attraction and furnished an interesting program.

The 290-horsepower Jay-Eye-See was a great disappointment, Disbrow having difficulty with his ignition apparatus in both mile trials, which were made in the same time, 1:03 4-5.

The Simplex Zip, also driven by Disbrow, gave an exhibition of speed and reliability that made a distinct impression on the crowd. In the 5-mile time trial four seconds were clipped from the track record, the time being 5:04 4-5. Twice he ran against the mile track record, but lacked a second in his better trial, which he finished in 0:56 2-5.

Three local records broken on the second day: Disbrow drove the Simplex 5 miles in 4:46 2-5, breaking the former record of 4:59. In the Australian pursuit race, Disbrow caught four cars in 6 miles, completing the race in 5:54. In the special event, Ball, a local entrant, driving an Apperson, made a new track record for 2 miles in 2:04 1-5. The summaries follow:

FIRST DAY

Exhibition time trials, 1 mile

Car	Driver	Time
1. Simplex	Disbrow	:58
2. Case White Streak	Disbrow	1:07
3. Case Bullet	Nikrent	1:07 1-2

Match race, Class C, non-stock, Division 3C, 3 miles

1. Case White Streak	Disbrow	3:44 2-5
2. Little Giant	Whalen	
3. Bullet	Nikrent	

Five-mile exhibition for track record (5:08 4/5)

Simplex	Disbrow	5:04 4-5
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Handicap for car of 300 cu. in. and under, 5 miles

1. Case Little Giant	Whalen	5:59
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Australian Pursuit Race, Class C, non-stock, Division 3C

1. Simplex	Disbrow	3 laps
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One-mile exhibition

Jay-Eye-See	Disbrow	1:03 4-5, 1:03 4-5
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Class D, free-for-all handicap

1. Simplex	Disbrow	5:25 4-5
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Mile Exhibition against track record (:55 2/5)

Simplex	Disbrow	:58 2-5 :56 2-5
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SECOND DAY

Five miles, Class C, non-stock, Division 3C

Car	Driver	Time
1. Case White Streak	Whalen	5:40

Five-mile handicap

1. Simplex	Disbrow	5:16
2. Apperson	Ball	

Class E, non-stock, handicap for cars under 300 cu. in., 5 miles

1. Case Little Giant	Whalen	5:40
2. Case Bullet	Nikrent	
3. Ford	Hough	

Exhibition 2 miles against track record

Apperson	Ball	2:04 1-5 Record
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Australian pursuit race

1. Simplex	Disbrow, in 6 miles	5:54 Record
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Five miles, free-for-all handicap

1. Case White Streak	Whalen	5:40
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Exhibition, 1 mile

1. Jay-Eye-See	Disbrow	1:01 1-5
2. Case Bullet	Nikrent	1:02
3. Case White Streak	Disbrow	1:03 3-5

Big Card for Galveston

Three-Day Meet on the Beach—Course Should Attract Big Fields—Only One Day for Elgin

GALVESTON, TEX., May 18—J. W. Munn, president of the Galveston Automobile Club, announces the following list of events for the Galveston Beach Meet, August 8, 9 and 10. The prizes aggregate more than \$6,000.

First day, August 8.—Event No. 1—Class C, division 3-C; distance 15 miles.

Event No. 2—Class C, division 2-C; distance 15 miles.

Event No. 3—Class C, division 4-C; distance 20 miles.

Event No. 4—Class C, division 1-C; distance 10 miles.

Event No. 5—Special class E, for cars of 600 cubic inches displacement and under; distance 75 miles.

Second day, August 9.—Event No. 6—Special class E, 230 cubic inches and under displacement; distance 25 miles.

Event No. 7—Special class E, 450 cubic inches and under displacement; distance 25 miles.

Event No. 8—Special class E, 300 cubic inches and under displacement; distance 25 miles.

Event No. 9—One mile, flying start, for beach record.

Event No. 10—Fifty-mile free-for-all.

Third day, August 10.—Event No. 11—Class D, free-for-all; distance 200 miles.

The races are to be run on the 2 1/4-mile beach course, near the western part of the city. The course will be fitted with banked turns at each end, and the cars will be in plain view of the spectators at all times. A spacious grandstand is to be erected well above the level of the beach, and on a much larger scale than those heretofore used. The repair pits will be installed directly in front of the stand.

Elgin Meet for One Day Only

CHICAGO, May 20—Because of the lukewarm interest being shown by American manufacturers in stock-car competitions, the Chicago Motor Club has made radical changes in its card for the coming season. First, the Algonquin hill-climb program has been changed by making most of the events non-stock, while, more important still, the annual road races at Elgin have been changed to non-stock and two of the events dropped, which will reduce the meet from 2 days to 1.

Before taking action in the matter of Elgin, the club carefully canvassed the industry, but failed to get many promises of entry in a stock-car meet. In fact, the outlook was so discouraging that it was believed that if the stock-car idea was attempted again the meet would be a failure. With so gloomy an outlook before them, the directors at their meeting last Thursday accepted the recommendation of the club's contest board that Elgin be cut to 1 day and that only two races be run, both of them class C contests. Of course the Elgin National trophy race will be retained. That will be for class C cars of 600 cubic inches capacity and less. The other will be a 231-300 class race, which, undoubtedly, will be run in the morning, with the big race in the afternoon. The date will be August 24.

BOSTON, MASS., May 18.—Since Harry Grant took charge of the securing of the entries for motor races at Rockingham park he has been hustling around to try to get some good races mapped out. Grant himself will drive in some of the events, as he is not going to Indianapolis this year.

One of the events he is trying to secure is a three-cornered match race in which he will drive against Charley Basle and Joe Downey.

Legal News of the Week

Spark-Plugs Labeled with Name and Place of Manufacture Dutiable as Printed China

Dorian Company May Be Revived—Dyer License Granted Minerva Company

WASHINGTON, D. C., May 18—An interesting decision relating to the dutiable classification of spark-plugs has been rendered by the United States Court of Customs Appeals in the case of Richard & Company vs. United States. The collector of customs at New York assessed the merchandise at 60 per cent. ad valorem as "china printed" under the provisions of paragraph 93 of the tariff act of 1909. The importers protested that the spark-plugs were china and other wares, not printed, ornamented or decorated, and that they were dutiable at 55 per cent. ad valorem under the provisions of paragraph 94 of said act. The board of general appraisers decided the spark-plugs were enameled and overruled the protest. The importers then appealed to the Court of Customs Appeals. On the hearing the importer testified the spark-plugs were porcelain and that they were imported for the Rajah Motor Supply Company. He further stated that the words "Made in Germany" were put upon the article for the purpose of complying with that part of section 7 of the tariff act which requires that all imported articles shall be marked with the country of origin, and that the word "Rajah" was placed upon the plugs to protect the trade-mark of the Rajah Motor Supply Co., which was copyrighted. The court's ruling was in effect as follows:

"'Enameled' as employed in paragraph 94, tariff act of 1909, has the limited meaning which it appears always to have borne in ceramics; that is to say, an opaque or colored semi-vitrified coating applied to the surface of pottery either as a decoration or for a utilitarian purpose. The merchandise of the importation could be classed as enameled only by an expert, for the true nature of its finish is unapparent to the eye of a layman. However, the contention is made that the merchandise is 'printed china.' The testimony to the effect that the word 'Rajah' appearing on the goods, was put there to protect a registered trade-mark or that the word 'Rajah' was a trade-mark at all, is too weak, vague and uncertain to overcome the presumption of correctness attaching to the collector's decision. The spark-plugs were properly held dutiable as 'printed china.' The board's decision is affirmed."

Aluminum Strikers' Case Postponed

BUFFALO, N. Y., May 21—Judge Hazel of United States District Court has postponed until Saturday, May 25, the hearing in the case of the members of Local No. 84, International Molders' Union of North America, on the charge of contempt of court in the alleged violation of the temporary injunction issued by the court restraining them from interfering with the business of the Aluminum Castings Company's plant in Elmwood avenue, where a strike of coremakers and molders has been in progress for 2 months.

Court Limits Stock Liabilities

Liability of stockholders in a bankrupt foreign corporation was construed not to extend to such stockholders as contracted for and purchased stocks at less than par upon the express agreement that the payments made should cover all charges, in the opinion of the New York Court of Appeals delivered by

Justice Collins in the case of the trustees for the Remington Automobile & Motor Company against Andrew D. Morgan.

The case is considered to be of much importance to the automobile industry because of the frequent application of the common law axiom that a stockholder is liable to be assessed for the difference between the amount he paid for his shares and the par value thereof.

In the case at bar, action was commenced by the trustee in bankruptcy to recover the difference between par value and \$25 a share, which was the sum paid by Mr. Morgan for two shares in the Remington company.

Judgment was rendered in favor of the trustee by the Supreme Court and the Appellate Division of the same tribunal and the case was carried to the Court of Appeals.

The judgment of that court reverses the findings of the courts below and grants a new trial of the cause. The costs of litigation already amount to many times the total sum involved in the suit.

May Rehabilitate Dorian Company

Schedules in bankruptcy on behalf of Moritz and Max Rosett, owners of a string of banking houses and the chief financial backers of the Dorian Remountable Rim Company, have been filed in the United States District Court. The schedules show liabilities of \$746,223, of which \$603,121 are unsecured. Nominal assets are placed at \$943,645. The list shows 11,000 shares in the Dorian company, valued at \$35,000.

Progress toward an adjudication of the difficulties of the Dorian company has been slow, as there is a reported prospect of the outright purchase and rehabilitation of the company.

Objects to Proposed Patent Bill

House Bill 23,417, which is now pending before the Committees on Patents of both the Senate and House of Representatives, contains a clause to take from the manufacturer of a patented article the right to control its price at re-sale.

Robert B. Dunlap, sales manager of the C. A. Shaler Company, calls attention to some of the results that would follow the enactment of the bill, particularly with regard to that phase.

In part Mr. Dunlap's argument follows:

"It would seem probable that an attempt will be made to railroad this bill through by the fact that it is attached to another measure prohibiting manufacturers from buying patents and burying them, making it compulsory that they manufacture them within 4 years of the granting of the patent, in such quantities as to supply the demand, or forcing them to permit others to manufacture under the patent.

"Thus far, all that has been published in favor of the measure has apparently been in an endeavor to show that the pres-

Minerva Granted Dyer License

Bert W. Sewell, representing the Minerva Motors Company, the importing house in New York for the Minerva car, was granted a sweeping license by the Enterprize Automobile Company, of Hoboken, N. J., authorizing the licensee to import and sell the product of the European factories.

The license is framed in terms similar to those already granted companies having more than a local patronage and provides for a royalty of 1-5 per cent. of the selling price of the cars for the use of the Dyer transmission and automobile patents.

The Minerva line has not been prominent so far in the United States, but Mr. Sewell has announced that a considerable selling campaign is about to be organized.

Edward M. Dickerson, patent attorney, owner of a Rochet, has been granted an individual license and Lewis C. Bruce, owner of a Sultan, has secured similar rights.

ent law is for the good of no one but the manufacturer and that its repeal would be of benefit to all others affected.

"An investigation from an unbiased viewpoint, however, would seem to reveal that it will work to the detriment of five classes alike, and these five classes make up 95 per cent. of the citizens of the entire country. In fact, it would seem that the only benefit would accrue to the unscrupulous cut-rate concerns and mail-order houses. The five classes referred to are as follows: Manufacturers, jobbers and dealers, publications, inventors and consumers."

In describing the situation Mr. Dunlap says:

"A patented article is necessarily a new device and as such usually requires a great deal of publicity to acquaint the public with its merits. The manufacturer sets a retail price which will allow himself, the jobber and dealer a legitimate profit and provide for advertising. It is generally several months before the business grows to a profitable basis, and when it does reach that stage the cut-rate houses become active, and unless the manufacturer is given the protection of the law, undue advantage may be taken by such concerns, thus demoralizing the trade.

"In case patents are not protected in value, many geniuses now employed or retained by manufacturing concerns will be thrown out of employment and individuals engaged in perfecting and inventing patentable devices would find no market for their product.

"The consumer is given uniform treatment and protected from extortionate charges by retailers and others under the present law, while both justice and reasonable prices would be destroyed by the enactment of the proposed bill."

Benz Import Company Gets Drawback

WASHINGTON, D. C., May 18—A ruling has been made by the treasury department to the effect that the regulations of November 27, 1907, providing for the allowance of drawback on motor cars manufactured by Brewster & Company, of New York, with the use of imported materials and parts, shall be extended, so far as applicable, to cover the exportation of motor cars manufactured by the Benz Auto Import Company, with the use of imported parts.

Seeks to Restrain Aluminum Company

PITTSBURGH, PA., May 20—Civil suit to restrain the Aluminum Company of America from monopolizing the manufacture of aluminum and its products has been filed in the United States District Court on behalf of the government. The government does not ask for dissolution of the corporation, but petitions for nine injunctions against as many alleged unlawful practices.

The government admits that the company's control of 90 per cent. of the known deposits of bauxite is not unlawful, but objection is made to the methods charged against the company in killing off possible competition.

Rushmore Charges Unfair Methods

Unfair competition was the main allegation of the complainant in the suit of the Rushmore Dynamo Works against the Badger Brass Manufacturing Company, which was heard by the United States Circuit Court of Appeals on Monday. The case was presented for the Rushmore side by A. Wilkinson and A. H. Graves and C. K. Offield represented the defense.

The validity of no patent is directly involved in the action, the suit being based upon the alleged course of the defendant in imitating the flare-front lamp pattern characteristic of the Rushmore product.

Two similar cases have been carried to the United States Circuit Court of Appeals when the Rushmore company sued other defendants and was awarded decrees in the upper court.

A decision is expected by both sides within a comparatively short time, as the court is well up with its work.

The Rose Company Suits

Extracts from Recent Court Decisions Setting Forth Exact Matter Covered by Decrees

Same Makers Institute Suit Against Eight Concerns for Infringement

COURT action in the suits of the Rose Manufacturing Company against Thomas Harper and the American Auto Supply Company, and the Rose Manufacturing Company against the Cox Brass Manufacturing Company and the Lowe Motor Supplies Company, as reported in these columns, has raised a question in the minds of some of the interested parties as to the exact matter covered by the decrees issued from the United States District Court.

The following are extracts setting forth the pith of the court orders:

In the case of the Rose Manufacturing Company, complainant, vs. Thomas Harper and American Auto Supply Company, defendants.

This cause having come on to be heard on the 7th day of May, 1912, upon the pleadings and on the notice of defendants, and a motion having been made by complainant for leave to dismiss its bill of complaint without prejudice, on payment of the defendants' costs, and Charles C. Gill having been heard on the part of the defendants, and Louis Prevost Whitaker on the part of the complainant, and due deliberation having been had, it is ordered, adjudged and decreed that complainant's motion to dismiss its bill of complaint without prejudice, is denied, and that the bill of complaint herein be and the same is hereby dismissed, with costs to the defendants to be taxed.

In the case of the Rose Manufacturing Company, complainant, vs. Cox Brass Manufacturing Company and Lowe Motor Supplies Company, defendants, the order, as issued by the court, follows:

This cause having come on to be heard on the 7th day of May, 1912, upon the pleadings and on the notice of Lowe Motor Supplies Company, who filed a separate appearance and a separate answer from the other defendant herein, and a motion having been made by complainant for leave to dismiss its bill of complaint with respect to Lowe Motor Supplies Company, without prejudice, on payment of the defendant's costs, and Mr. Charles C. Gill having been heard on the part of the defendant, Lowe Motor Supplies Company, and Mr. Louis Prevost Whitaker on the part of the complainant, and due deliberation having been had, it is ordered, adjudged and decreed that complainant's motion to dismiss its bill of complaint without prejudice, is denied, and that the bill of complaint herein with respect to Lowe Motor Supplies Company be and the same is hereby dismissed, with costs to the said defendant to be taxed.

Eight Defendants in Rose Suit

Suit has been entered on behalf of the Rose Manufacturing Company in the United States District Court alleging infringement of the Rosenbluth patent on license plate holders and directed against the following named defendants: Emil Grossman, the Emil Grossman Company, Eclipse Specialty Company, National Sales Corporation, Motor Car Equipment Company, Gus Balzer Company, American Auto Supply Company and the Lowe Motor Supplies Company.

The suit is said to include some additional allegations, extending farther than the former actions brought by the Rose Company which were recently dismissed.

Body Company Must Show Books

PONTIAC, MICH., May 20—Judge Smith, in Circuit Court, has granted a mandamus compelling the Monroe Body Company to permit Ferd H. Yeomans, of Detroit, one of the stockholders, to examine the books. Yeomans alleges he has had no dividends from his stock. The examination is to be made by Yeomans or an accountant whom he may designate to perform the work and make a report.

Closing Up Goodrich-Diamond Deal Details

Meeting of the Diamond Stockholders to Ratify Sale Next Monday—No Increase of Capital Stock

Nothing in Rumors That Other Companies Are to Be Absorbed—No Changes in Organization

AKRON, O., May 20—The finishing touches will be made here Monday, May 27, at noon, in the sale of the Diamond Rubber Company plant to the B. F. Goodrich Company, when a meeting of the stockholders of the Diamond Company will be held to approve of the transfer of the Diamond property to the Goodrich Company, thus completing the biggest rubber deal ever made and giving to Akron the largest rubber plant in the world.

In discussing the purchase of the Diamond plant B. G. Work, president of the Goodrich company, said this week that the holders of each share of Diamond stock will receive 2.7 shares of Goodrich common stock, one share of Goodrich preferred stock and \$55 in cash. "They will receive," said Mr. Work, "\$75 worth par value of preferred stock and \$80 in cash, but will be permitted to devote \$25 of the cash to the purchase of preferred stock at par. Of the cash to be received \$5 is in a cleaning up of profits. The New York bankers report by telephone that they have closed the subscription books for all the common and preferred they had to sell."

"Will the Goodrich company shortly increase its capital stock to \$150,000,000 instead of \$90,000,000?" Mr. Work was asked.

"There is nothing in that, nor in the reports that we contemplate taking in other rubber companies," replied Mr. Work. "The new Goodrich company, as now contemplated, will be the old Goodrich and the Diamond companies and no others."

Since the sale of the Diamond to the Goodrich company there have been many rumors that sweeping changes will be made in the selling organization of the new company. This is denied by President Work.

Another of the rumors has been that nearly all of the Diamond branches or agencies throughout the country are to be discontinued. This is also denied by President Work, but he intimated that eventually they will be amalgamated in each city into one branch.

In discussing the future of the Goodrich company President Work said: "The name Diamond will continue as a trade mark, as will also the Goodrich. Both Goodrich and Diamond tires will be marketed in the future as in the past. As to the rumors that the Goodrich company is to make many changes in its marketing force I will say that there are to be no special changes. We propose to double our marketing force. The entire office force of both companies will also be retained."

The new company is to be known as the B. F. Goodrich Company. It will be the largest rubber plant in the world, having a capital of \$90,000,000 and a working force of 9,000 people in Akron alone. The Diamond company is now employing 4,000 and the Goodrich 5,000. At the present time the monthly payroll of the Goodrich company is \$400,000, while that of the Diamond is \$300,000. The monthly payroll of the new Goodrich company will be \$700,000.

The Goodrich company was organized in 1869 and the first actual rubber products were placed on the market a year later. Twenty-five people were employed by the Goodrich company at the start and the first year's output of the factory amounted to \$49,403. The growth of the Goodrich company is best under-

stood by a statement just issued showing the profits and gross earnings of the company during the past four years:

Year ending	Profits	Gross sales
December 31, 1908.....	\$2,793,433.12	\$13,815,914.38
December 31, 1909.....	3,433,548.75	18,605,238.04
December 31, 1910.....	1,605,254.10	23,806,578.76
December 31, 1911.....	3,992,592.03	27,406,732.53

It is said that if the Diamond company's report for the same time were known it would contain just as remarkable figures.

The Diamond company was incorporated here about 15 years ago, giving employment at first to but 250 men. Its growth has been almost as remarkable as that of the Goodrich. The Diamond group consists of twenty-five buildings and the twenty-sixth is now under construction. It will be 160 feet wide and 267 feet long. The estimated cost is \$190,000. It will be used for tire manufacturing purposes.

U. S. Rubber to Increase Capital

Financial plans of the United States Rubber Company for the immediate future were outlined Tuesday afternoon at the annual meeting of the company at New Brunswick, N. J., by Samuel P. Colt, president. The president reported that the company found it desirable to increase its cash capital by \$10,000,000 to finance manufacturing extensions and to increase production.

The plans suggested call for an increase in the total authorized capital stock from \$75,000,000 to \$120,000,000. This will be divided into \$40,000,000 common and \$80,000,000 preferred. The increase will be represented by \$15,000,000 common and \$30,000,000 preferred.

The distribution may be as follows: A dividend of \$5,000-

Automobile Securities Quotations

While the new Goodrich common stock has not been issued so far, it has had a lively market on the New York curb ever since it was authorized. Immediately after the announcement was made that a huge stock dividend as well as a cash distribution would be made the market level for the new shares was established upon what was deemed a fair investment basis and the old stock retired from circulation.

For a week after the announcement the fluctuations of the new shares were rather violent, but almost all of the sales were made around 79. Then the market began to creep upward and on Tuesday the quotations were over 86. The following table shows prices on May 21 and the corresponding day last year:

	1911		1912	
	Bid	Asked	Bid	Asked
Ajax-Grieb Rubber Co., common.....	..	..	95	100
Ajax-Grieb Rubber Co., pfd.....	..	..	100	..
Aluminum Castings, pfd.....	..	..	41½	42½
American Locomotive, common.....	108	110	107	109
American Locomotive, preferred.....	..	..	140	155
Chalmers Motor Company.....	3½	5	18	20
Consolidated R. T. Co., common.....	15½	25½	58	..
Consolidated R. T. Co., preferred.....	273	275	383	386
Diamond Rubber Company.....	164	168	285	295
Firestone Tire & Rubber Co., com.....	103	105	106½	107½
Firestone Tire & Rubber Co., pfd.....	..	..	100	..
Garford Company, preferred.....	36	37	35	37
General Motors Co., common.....	79	80	76	77
General Motors Co., pfd.....	235	240	86	*86½
B. F. Goodrich Co., common.....	112	115	108	*108½
B. F. Goodrich Co., preferred.....	218	221	265	275
Goodyear Tire & Rubber Co., com.....	101	102	105	105½
Goodyear Tire & Rubber Co., pfd.....	..	..	..	104
Hayes Manufacturing Company.....	..	..	33	35
International Motor Co., com.....	..	..	93½	96
International Motor Co., pfd.....	..	..	..	55
Lozier Motor Company.....	..	..	160	165
Miller Rubber Company.....	..	..	104½	106
Packard Motor Co., preferred.....	..	..	160	..
Peerless Motor Company.....	54	57	29	31
Pope Manufacturing Co., com.....	74	77	73	74½
Pope Manufacturing Co., pfd.....	8½	9½	9	10½
Reo Motor Truck Company.....	21½	22½	24½	25½
Reo Motor Car Company.....	..	..	39	40
Studebaker Company, common.....	..	..	96	98
Studebaker Company, preferred.....	..	..	112	114
Swinehart Tire Company.....	..	..	85	..
Rubber Goods Co., common.....	..	..	104	108
Rubber Goods Co., pfd.....	39	40	6¼	6¾
U. S. Motor Co., common.....	79	80	25	30
U. S. Motor Co., preferred.....	..	..	107½	108½
White Company.....	..	..	..	..

*New.

100 of the new common stock to present stockholders, which would be at the rate of 20 per cent. of their present holdings; \$10,000,000 of first preferred to be offered ratably to all stockholders at par and accrued dividend. To submit an offer to the holders of the present second-preferred issues to exchange their stock for the new first-preferred on a basis of 100 shares of the existing second-preferred for seventy-five shares of the new first-preferred.

It is understood that \$2,500,000 of the new first-preferred will be offered to minority stockholders in the Rubber Goods Manufacturing Company, the holding company controlling the stocks of numerous automobile tire companies. Informal vote will be taken on the proposed plan by the stockholders on May 31.

Refunding of all existing obligations of the main and subsidiary companies is contemplated.

Wall street looked for the announcement of a \$50,000,000 bond issue after the meeting and such an announcement after the vote has been taken would surprise nobody.

Locomotive Issues \$1,500,000 Bonds

The Locomobile Company of America has issued \$1,500,000 of 10-year 6 per cent. sinking-fund bonds for refunding and extending manufacturing operations. The company has enjoyed a remarkably successful season so far and the manufacturing has been on a larger scale than ever before. The company already has outstanding \$1,000,000 of debentures, \$1,500,000 7 per cent. preferred and \$4,750,000 common.

Market Changes for the Week

Fluctuations in the prices of materials were few and of small significance during the past week. Copper advanced slightly; so did tin, while the steel prices remained without alteration. Activity in steel quarters continued. The price of gasoline remained unchanged during the week, but Kansas and Oklahoma crude oil advanced 2 cents, making the price per barrel 68 cents. Other lubricants and oils underwent no change, with the exception of cottonseed oil. The price of the latter, raised by speculation during the previous fortnight, broke about a week ago and fell approximately 30 cents during this week.

Crude rubber was practically stationary during the past week, with trade small and supplies about the average. The fluctuations have been unimportant, most of the sales being at or about \$1.10 a pound for up-river fine as a basis. Price-range follows:

Material	Wed.	Thurs.	Fri.	Sat.	Mon.	Tues.	Change
Antimony, per lb. ....	.06½	.06½	.06½	.06½	.06½	.06½	....
Beams & Channels, 100 lbs.	1.36½	1.36½	1.36½	1.36½	1.36½	1.36½	....
Bessemer Steel, Pittsburgh, ton .....20.00	20.00	20.00	20.00	20.00	20.00	20.00	....
Copper, Elec., per lb. ....	.16	.16½	.16½	.16½	.16½	.16½	+ .00½
Copper, Lake, per lb. ....	.16½	.16½	.16½	.16½	.16½	.16½	....
Cottonseed Oil, May, bbl.	7.27	7.15	7.09	7.11	6.97	7.00	— .27
Cyanide Potash, lb. ....	.20	.20	.20	.20	.20	.20	....
Fish Oil, (Menhaden) ..	.40	.40	.40	.40	.40	.40	....
Gasoline, Auto, 200 gals. @ ...	.19	.19	.19	.19	.19	.19	....
Lard Oil, prime ..... .85	.85	.85	.85	.85	.85	.85	....
Lead, 100 lbs.	4.15	4.17½	4.20	4.20	4.17½	4.15	....
Linseed Oil ..... .76	.76	.76	.76	.76	.76	.76	....
Open-hearth Steel, ton ....21.00	21.00	21.00	21.00	21.00	21.00	21.00	....
Petroleum, bbl., Kansas crude ..	.66	.66	.66	.66	.68	.68	+ .02
Petroleum, bbl., Pa., crude	1.55	1.55	1.55	1.55	1.55	1.55	....
Rapeseed Oil, refined ..... .68	.68	.68	.68	.68	.68	.68	....
Rubber, Fine Up-River Para	1.10	1.10	1.10	1.10	1.10	1.10	....
Silk, raw Ital.	4.15	....	....	....	4.15	....	....
Silk, raw Japan	3.62½	....	....	....	3.67½	....	+ .05
Sulphuric Acid, 60 Beaumé. ....	.99	.99	.99	.99	.99	.99	....
Tin, 100 lbs. ....45.90	46.50	46.50	46.50	46.50	46.50	45.75	— .15
Tire Scrap ..... .08½	.08½	.08½	.08½	.08½	.08½	.08½	....

Splitdorf Electrical Company Incorporated

Big Combination Effected with Torrington Company, with a Capitalization of \$3,500,000

Locomotive Company Issues \$1,500,000 of Bonds—Freight Blockade Still Bothers Makers

ARTICLES of incorporation have been filed at Trenton, N. J., for the Splitdorf Electrical Company, capitalization \$3,500,000. The incorporators are: J. F. Alvord, J. Splitdorf, J. R. Viles, C. W. Curtis and B. S. Keefer. The home of the company is given at Newark, N. J.

John F. Alvord has been elected president and C. F. Splitdorf, vice-president. The company has been organized as an entirely new and distinct corporation with its stock issues divided into \$1,500,000 of 7 per cent. cumulative preferred and \$2,000,000 common. Mr. Alvord, representing the Torrington Company, of Torrington, Conn., is the sponsor for the new company.

The C. F. Splitdorf Company, which is merged in the new corporation, is one of the pioneer American electrical concerns.

The company will manufacture ignition and lighting devices, magnetos, coils, spark-plugs, instruments, windshields, carbureters and motors.

The Torrington Company has been identified with the motorcycle industry and the production of accessories.

Other officers of the company include the following: Bryant S. Keefer, treasurer, and Carlos W. Curtis, secretary and general manager. In addition to the four officers named, John R. Viles has been elected a member of the board of directors.

Sidney S. Meyers conducted the negotiations that have resulted in the formation of the new corporation. It has been announced that no radical changes will be made for the present in the personnel and staff. The plans of the company contemplate a large increase in the business of making magnetos and it will specialize in that branch.

Freight Blockade Not Yet Over

TOLEDO, O., May 20—Owing to the freight blockade which practically paralyzed many of Detroit's industries, including many automobile factories, during the past winter and early spring, and that made Toledo one of the centers of congestion, the Detroit Board of Commerce has created the office of traffic commissioner, Arthur T. Waterfall being appointed as the first incumbent. Mr. Waterfall is familiar with transportation matters. While the congestion has been greatly relieved, conditions are still so bad that lake transportation has been largely resorted to by both Toledo and Detroit manufacturing concerns, and steamers operating between Detroit, Toledo and Port Huron are carrying double the amount of package freight ever before transported so early in the season. About 20 automobiles a day have been carried by White Star steamers. Overlands are shipped from Toledo by this route and Detroit factories are sending large consignments to this city.

REBELLION in the Acre, that district lying between Peru, Bolivia and Brazil and claimed by each of them at various times, has resulted in checking the free movement of rubber into Manaoas. Fragmentary reports from various South American capitals mention the revolt but do not particularize. The Acre raises a large amount of high-grade crude rubber.



Scene at the dinner of the Big Village Motor Boosters at Travers Island on May 15

Motor Boosters' Dinner

Crowd of 225 Automobile Enthusiasts
Present at the Organization's
Greatest Symposium

THE largest automobile trade function for the year in the neighborhood of New York was held Wednesday evening, May 15, when the spring outing of the Big Village Motor Boosters was held. Through the courtesy of the New York Athletic Club the clubhouse at Travers Island was turned over to the enthusiastic boosters and a royal good time was enjoyed.

A crowd of 225 assembled at Columbus Circle shortly after 6 o'clock, where they were met by sixty automobiles decorated with red flags. The clubhouse was reached at about 7 o'clock. During the short interval between the time of arrival and dinner the time was given over to introductions and a survey of the beautiful grounds around the building. By the time the dinner was served the boosters were in a mood to enjoy an excellent menu provided by Superintendent Keenan. During the dinner an interesting vaudeville entertainment was given.

After the dinner a few more vaudeville numbers were assisted by impromptu sketches by some of the more enthusiastic members of the party. The entertainment was concluded by an exhibition of moving pictures of the Jeffries-Johnson fight. The various incidents before and during this memorable combat were explained by Jack Gleason, who was associated with "Tex" Rickard in promoting the fight.

A feature of the evening was a collection which was started for the benefit of the Orphans' Automobile Day Association. The sum of \$61.16 was contributed by the boosters. Another interesting feature was the presentation of gold watch-chains to Senator W. J. Morgan, E. S. Schwartzkopf and Duncan Curry. The committee who were responsible for the success of the occasion consisted of H. A. Bonnell, E. J. McShane, Fred J. Wagner, Harry Burchell, W. C. Poertner, John Eustiss, C. E. Schrap, George Robertson, A. J. Intereden, Charles Stewart, Eddie Korbel and J. Wetmore.

The committee announced that a number of similar affairs were to be held during the coming summer.

But One Show for 1913

Two-Weeks' Affair to Be Held in Both
Garden and Palace Under A.
B. of T. Auspices

OFFICIAL announcement of the fact that there will be but one automobile show held in New York in 1913 was made this week by the Automobile Board of Trade. The show will be held for 2 weeks commencing January 11. Heretofore, ever since the industry assumed large proportions, there have been two shows held in New York each season, but the show season of 1913 will see a different condition, according to the statement issued on Monday, which is as follows:

"New York will have but one automobile show next winter, and it will be so big as to make necessary the use of two buildings. This was settled definitely last week, when a contract was signed for the use of Madison Square Garden by the Automobile Board of Trade, which also has a lease on the new Grand Central Palace.

"The combined shows will be held under the auspices of the Automobile Board of Trade, the exhibits being divided between the new Grand Central Palace and Madison Square Garden.

"According to present plans, the shows will be open to all makers of motor cars and accessories, but the plan of allotting space has not been definitely settled. It is likely that a single ticket will admit to both buildings, with arrangements for conveniently transporting visitors from one building to the other.

"It was believed that Madison Square Garden would remain up for a year, but the announcement of the Board of Trade makes this a certainty. The Grand Central Palace people state that plans for their arena are being perfected and that it will be ready for the 1914 automobile show.

"The Show Committee of the Automobile Board of Trade that will have in charge the big double exhibition next winter, are Colonel George Pope, chairman; Charles Clifton, Alfred Reeves and Merle L. Downs."

It will be noted in the foregoing that no changes have been made in the personnel of the show committee and that in subsequent years the shows will be held in adjoining buildings.

Truck Makers to Meet

Second Convention of Commercial Vehicle Manufacturers Set for June 4
—Fine Program

THE second convention of the Commercial Motor Vehicle Manufacturers will meet June 4 at the headquarters of the National Association of Automobile Manufacturers. The meeting will be called to order at 10 o'clock in the morning and it is expected that there will be a large and typical attendance.

At the initial meeting of the organization a big majority of the truck-making companies were represented and the outlook for the coming meeting is that it will exceed the first by a dozen or more. There were fifty present at the March meeting.

The tentative program will include the following topics: Standardization—frame widths and lengths, heights of frames and platforms from ground, proportion of useful load to chassis weight, and tire sizes. Tire mileage of trucks in various cities. Standard caution plate. Census of production. Insurance—rates for fire, liability, collision and property damage. Proposed bill for truck registration.

At the earlier convention a marked feature of the proceedings was the freedom with which the discussion was carried on, and in order to foster the idea and develop it still further, the N. A. A. M. in issuing the final call has requested the representatives to come prepared with detailed information on the topics.

May Continue Staggard Tread Suit

YOUNGSTOWN, OHIO, May 21—It is probable that the Republic Rubber Company will continue litigation in the Staggard Tread suit in spite of the fact that the United States Circuit Court of Appeals has reversed the decision granted in its favor.

According to a general letter sent out to-day to the Republic's branch managers, the company believes the decision does not invalidate its patent except as to the single claim which was involved in the Morgan & Wright suit and does not affect the patent so far as it covers the Staggard Tread arrangement.

Probably the Republic company will litigate the case further, as it is hopeful of a different final outcome on the particular points involved between it and Morgan & Wright. It is stated that it will be the disposition of the Republic company immediately to prosecute suits against any makers of tires in imitation of the Staggard patent.

Dick-Henry Patent Case Disposed Of

Under the mandate of the United States Supreme Court, the United States Circuit Court of Appeals has made final disposition of the Dick-Henry patent case by handing down its decision in conformance with the rulings of the Supreme Court. This affirms the ruling of the court.

The case is the one which brought the discussion of the present patent laws to a crisis this spring. The Dick company sold a mimeograph to a woman customer who purchased ink to use with it from the defendant company.

THE Merchants' Association of New York City has passed a resolution committing that organization to oppose the Oldfield bill, by the enactment of which in Congress it is proposed to recodify and revise the entire present patent law of the land.

The association lays particular stress upon its objections to sections 17 and 32. Section 17 is the clause of the bill which provides for compulsory licensing and the other section provides that a patentee may not restrict the use of his device in the hands of the purchaser with respect to the use, with or by it, of other materials.

Pabst Donates Trophy

Millionaire Brewer Adds Blue Ribbon Trophy to List to Be Fought for at Milwaukee

MILWAUKEE, WIS., May 21—A trophy of greater intrinsic value and carrying larger emoluments than any other prize ever offered for a contest for motor cars has been donated by Col. Gustave Pabst, the millionaire Milwaukee brewer, as a trophy for a third race to be run in conjunction with the Vanderbilt Cup and Grand Prix at Milwaukee in September.

It is likely that the Pabst trophy will be for light cars. It will be known officially as the "Pabst Blue Ribbon Trophy" and the deed of gift now in preparation will make it a perennial prize, the annual winner to receive a replica for permanent possession, together with a monthly stipend of a large sum during his tenure of holding the cup. Its formal presentation to the A. A. A. or the A. C. A., depending upon whether the trophy is to be national or international, will take place at Indianapolis on Memorial Day.

It is possible that a fourth trophy, to be known as the Milwaukee Challenge Cup, will be offered, although this will depend largely upon conditions after the guaranty fund is raised.

Contrary to expectations, the course was not selected, nor was the prize list announced at the meeting of the Milwaukee Automobile Dealers' Association last Thursday. The meeting developed into a rousing rally to raise a fund of \$50,000 for the expense of the road racing carnival. A committee representing every known organization interested in Milwaukee's welfare was appointed and Mayor G. A. Bading consented to act as chairman and lead the campaign.

The delay in the selection of a course is due to the fact that the M. A. D. A. has been obliged to search into the Old World for the owners of acreage along proposed routes for the desired consent to the running of motor races on the public highways, said owners being at present traveling abroad.

The dates for the big races are still causing the M. A. D. A. some concern. These will also be selected Wednesday night. It seems probable that the week of September 15 or 23 will be chosen. The American Automobile Association has suggested September 17 to 21 as being the choicest dates.

The organization of the road building forces is now under way, the State Highway Commission lending the aid of expert engineers. It is planned to start ten crews on ten stretches of the course at once.

The Wisconsin Motor Manufacturing Company has donated a \$2000 cup for the medium car event, to be known as the Wisconsin Motor Trophy.

Spill in Practice at Indianapolis

INDIANAPOLIS, IND., May 20.—The first accident during the practice for the 500-mile race to be held at the Indianapolis Motor Speedway occurred yesterday, when Gil Anderson's Stutz No. 1 turned a triple flip-flap at the northeast turn. Anderson and his mechanic escaped injury and the machine was not badly damaged, being out for practice today as usual.

Anderson was driving at a speed estimated at 92 miles an hour, clinging close to the edge of the track. The grease on the turn caused the car to slip off into the mud and it turned over three times, the last turn depositing the car in the mud.

Anderson and his mechanic, Frank Agen, escaped injury, probably on account of the mud, and they threw wet earth on the engine to extinguish a small blaze. The hood was torn from the radiator and frame; the insulation burned from the wires and the engine plastered with mud. The car, however, was able to proceed to the pits under its own power.

Pan-American Meeting Discusses Automobiles

Representatives from Every Latin-American Country Hear Papers on Betterment of Commercial Relations with the United States

THE first annual Pan-American trade conference was held last week at the Waldorf and was attended by an impressive number of delegates from Latin-America as well as the United States. The conference was held under the auspices of the Pan-American Trade Association.

Hon. P. R. Rincones, Consul General of Venezuela, told of the great market offered by his country for every variety of manufactured product.

He called attention to the boom that Venezuela is now enjoying resulting in the construction of new roads and a demand for motor vehicles of every type.

Hon. Francisco Escobar, Consul General of Colombia, expressed a desire for the settlement of the diplomatic questions now at issue between this country and our own. He believed that we are the people naturally predestined to supply his country with the means, mechanical and otherwise, for its development.

Hon. M. Gonzalez, whose command of the English language is admirable, spoke at length on the development of trade between the United States and the Latin-American countries. He dwelt upon a number of conditions essential to our getting our share of the wealth that is flowing from the South American market. We must never think of sending them literature in anything else than Spanish, and our catalogues must be in good Spanish at that. He dwelt also upon the need of personal representation and urged that these men must not only know how to sell goods but should understand the language of the country and be men of good manners and widely intelligent. He said that we would never get our share of South American business until we go after it with the same system and energy shown by other countries. He urged, too, that when we seek to sell the people down there motor vehicles to meet the growing demand we should provide depots in the great South American cities where parts are kept in stock. He also advised the use of metric measurements as these are universally familiar throughout Latin-America and the use of English measures imposes a handicap that should be avoided.

Other consuls who were upon the program this first session were Hon. A. Metz Green, Consul from Uruguay, and Hon. Ernest Chauvet, Consul from Haiti.

Mr. B. H. Reynolds, Superintendent of the Central and South American Telegraph Company, spoke briefly of the great reduction recently made in telegraph tolls, until now the Latin-American rates approximate those charged to Europe. He stated that fully 50 per cent. of the business transmitted by his company originated in Europe and was sent via New York. The service, too, is prompt and Buenos Aires can be reached in as short time from New York as Chicago.

Miss Annie S. Peck described the splendid South American cities such as Buenos Aires extending over a great plain and of vast wealth with a population of 1,350,000, Rio de Janeiro with its 1,000,000 people, the most beautiful city on earth and one of the richest. Miss Peck is an author, explorer and globe trotter and based her observations on a world-wide experience. She believed that there was a great market for American-made articles of luxury, such as automobiles, if our manufacturers would only go after the business in the right way. She expressed the opinion that the South American business standards

are higher than our own and that the business resulting from proper efforts to secure it will be of the most satisfactory character. She warned her hearers to send the Latin-Americans their best and to keep their product up to sample and description.

The first session closed with an address by Mr. John M. Barrett on Commercial Arbitration as a means of settling international business disputes.

The second day's session contained such topics of addresses as Trade with Chile by Sr. N. Pancorvo, Trade with Colombia by Sr. Ramon Castro (Revista Nacional de Colombia), and Export Catalogues by Sr. Seijas, Venezuela.

Sr. J. P. Santamarina, C. E., of Buenos Aires, author of The Argentine Republic, told of the boundless resources of that great country of prosperous cities and rolling pampas which is now coming to buy motor cars in great quantities and where some American manufacturers are already represented to a degree.

Dr. John D. Long, Acting Secretary of the Pan-American Trade Association, pointed out the continental extent of Brazil and its great future. He called attention to the fact that in size it exceeds this country with the exclusion of Alaska, and Europe if France is left out.

Sr. Vicente Gonzalez spoke on banking with Latin-America and spoke of our lack of banking facilities. He thought that the remedy should come not by the establishment of American banks in South America, but by utilizing the native banks now there and adopting the European method of treating commercial paper.

Must Pay for Workmen's Injuries

MILWAUKEE, WIS., May 20.—An interesting construction of the new industrial insurance or workmen's compensation act in Wisconsin with regard to liability for accidents or death in highway improvement or good roads work has just been placed on the law by the industrial commission of Wisconsin. The decision, made in a test case, means that county governments are liable for injuries or death to workmen engaged in road improvement according to the new state aid law. George Edminster and August Popke were injured while working in a sandpit in Waupaca county for the county highway commissioner. When compensation was asked from the county, the case was referred to the industrial commission, which ruled that the county must pay. Edminster was awarded \$288.92 and Popke \$104.12.

Ask Police to Enforce Lights Law

BOSTON, MASS., May 18—The Automobile Legal Association has taken steps to see that the present law which requires all horse-drawn vehicles to carry lights at night from 1 hour after sundown to 1 hour before sunrise, the same as motor cars, will be enforced this year. To do this a letter has been written to the chiefs of police of all the cities and towns of the state, asking them to see that "chapter 578 of the acts of 1911, which requires every vehicle on wheels, whether stationary or in motion, on any public highway or bridge, shall have attached to it a light or lights which shall be so displayed as to be visible from the front and rear" during that period, is enforced.

Farmers Study Traction Engines

MINNEAPOLIS, MINN., May 20—Forty farmers have begun the annual school of theory and practice of traction engines at the Minnesota State Agricultural College. The course is under direction of Instructor J. L. Mowry of the chair of engineering and will last 4 weeks. Mornings are spent in the class room, where the afternoon work in the shops and field is outlined. In the afternoon the students practice making pipe fittings, valve settings, farm blacksmithing and experiment with electricity, fuels and oils and try their hand at actual running of gasoline and steam engines.

Peeps Thro' Goggles at Distant Lands

Paris Motorizing All Municipal Departments—London Motor Car Museum—
French Industry Falling Behind
—Car for Arctic Exploration

TOURISTS in Continental Europe who go about unattended and engage motor cars promiscuously are warned by officials to look out for themselves. Some of the motor cars are provided with hidden gas reservoirs. When in a lonely spot, the chauffeur turns on the gas, suffocates the passenger and robs him or her.

Paris is to be thoroughly motorized. Already the fire brigade is under orders to dispose of all its beautiful horses, motor-engines having been contracted for; the hospitals use motor ambulances, motor hearses and motor cars are used in funeral processions; the horse-drawn police vans have given way to motor-driven vehicles; and motor cars by the dozen are now at the disposal of the Paris gendarmes in the event of an emergency calling for a quick move.

Arrangements have been made in London for the foundation of a motor car museum, to include a historic collection of motor cars. The object will be to show the mechanical genius of Trevithick, Murdoch, Gurney and Hancock. The location of the museum is to be in South Kensington. Germany already has a wonderful museum along these lines in Munich.

The average prices of imported automobiles sold in England for the last four years were as follows: In 1908, \$1,815; 1909, \$1,665; 1910, \$1,595; 1911, \$1,265.

French Business Less Than in 1910

The French government returns for 1911 show that the amount of business done during the year was 0.42 per cent. less than in 1910. The statistics show that the French have fallen far behind the United States, Great Britain and even Russia. Although the motor car trade of France with Spain, Switzerland, Germany, Brazil, Algeria and Turkey increased, figures show that the nation lost 22.3 per cent. of her business with Great Britain and 21 per cent. with the United States. Upon the other hand, France felt the deadly effect of foreign invasion to the extent of 32 per cent. during 1911, as compared with the 1910 statistics. Of this invading trade, Great Britain got 10 per cent. of the patronage; Germany came next, Belgium third and the United States fourth.

The German General Automobile Club and the German Imperial Automobile Club have organized an international reliability for light motor cars having engines between 4 and 8 horsepower. The program includes, from the start, these runs: Berlin to Stettin, July 2; Stettin to Posen, July 3; Posen to Breslau, July 4; Breslau to Glatz and return to Breslau, July 5; Breslau to Dresden, July 6, the participants visiting the Dresden Exhibition on the following day.

The combined capital of new companies organized during 1911 for the purpose of trafficking in and manufacturing automobiles and parts in Great Britain was \$13,605,725. The capital for these purposes in 1910 was \$16,465,250.

John A. Corry, of Leeds, Yorkshire, England, has patented a motor car for polar exploration purposes. He intends that it shall be used for climbing of ice cliffs. The car will be propelled by corrugated steel threads fixed on an endless chain, which will give a firm grip on the ice surface. It is purposed to cross crevasses by a system of expanding trellises and telescopic rods of tough steel operated from the car. The inventor declares that a fleet of his cars would permit the establishment of

bases for supply at specified distances on the line of the route to the Pole.

Germany has just published statistics showing that ending with the fiscal year, October, 1911, she imported \$2,485,000 worth of foreign-made automobiles, as compared with the fiscal year of 1910, which was \$2,302,650. Her exports also increased from \$6,328,000 in 1910 to \$7,205,500 in 1911.

Vienna is educating her police to gain a practical knowledge of driving and caring for the motor car. Lectures are given on the automobile and the police are visiting the factories to witness the manufacture of automobiles.

The Royal Mews belonging to Buckingham Palace are under control of the Hon. W. C. W. Fitzwilliam, the crown equerry, who, under the Earl of Granard, is master of the horse. But many changes have recently been made, motor cars having been substituted in the majority of cases for horses. To this end a considerable proportion of what was formerly the Mews has been converted into a garage. Several cars are constantly kept here in readiness for the use of the King and Queen.

Harking Back a Decade

FROM *The Motor Review*, May 22, 1902:

The French heavy-weight touring trials, covering 714 miles, were run off in three classes, arranged according to rated loads. A Turgan-Foy tractor rated at 12,755 kilos and a dray of the same make, both using steam power, were the entries in the big class. The second class included seven gasoline trucks and one with steam power and the smaller class consisted of gasoline cars. There were fourteen starters. The winners of medals were: Daimler, De Dietrich, Gillet-Forest and Peugeot.

The combination of dynamo and battery is indeed a happy one, for the latter may be used primarily to furnish the initial spark in starting the motor and run with the needed current until it attains the requisite speed, at which time it may be switched out of the circuit and the dynamo made to shoulder the demand of ignition centers.—*Technical article.*

Rules for the coming endurance run of the Automobile Club of America have been issued. The speed limit is sharply set at 15 miles an hour, but under the rules the official observers are charged with the duty of warning the drivers when the speed is too slow. In case, however, such warning is not given, the driver is not relieved of responsibility in making controls. The course is from Fifty-ninth street through Westchester County to the Connecticut state line and then along the shore of the Sound past Westport, where the turn will be made, following the same route in reverse to the starting point.

The first move in correcting the conditions that make for danger in repair stations should be to place the gasoline storage supply outside of the building and, where possible, underground; the next should be to provide an unflammable floor, such as cement or brick; another, to light the station by electric incandescent lamps only; another, to absolutely prohibit other lights or the striking of matches in the same room in which tanks are emptied and filled.—*Editorial.*

That the automobile is not a dangerous means of transportation is evidenced by the fact that the accident insurance companies rate the automobile as third in the list of safe modes of travel, ranking only behind the steamship and steam railroad in relative safety.

Under the new law which provides for automobile registration in New York, 909 cars have been listed.

Colonel John Jacob Astor is at the head of a company which plans to run a line of automobile stages from Rhinebeck, N. Y., to the New York Central railway station at Rhinecliff.

The E. R. Thomas Motor Company has been incorporated at Buffalo for \$500,000.

The Apperson Brothers Automobile Company is building a new factory at Kokomo, Ind. The new building will be three stories, 41 by 104 feet.

Touring Conditions in the Southland



Road scene near Sulphur Springs, Greenbrier, W. Va.



Rock road in the suburbs of Tampa, Fla.

Beautiful Flatwoods road out of Tampa

Typical road scene near Pinehurst, N. C.

IN TIME half the people who invade the winter resorts of the South each year—perhaps three-fourths—will travel into Dixie by motor car instead of by steamer or by rail. Some day the car owner would no more think of going to a winter resort without his car than he would without his evening clothes.

How soon this time will come nobody can say. It is possible, though, to present a few figures that have a bearing on the situation. For instance:

1. The increase in the number of cars shipped or driven South to winter resorts for the season of 1911-12 was 57 per cent. greater than in the previous year.

2. Last year not more than 5 per cent. of the cars used by winter resorters (or "tourists," as they are known in the vernacular) were driven all the way from North to South.

3. Probably half of those used at the inland resorts were shipped South by boat to the nearest seaport and then driven overland to their destination, sometimes by the owner and sometimes by the chauffeur.

4. The number of garages available at the winter resorts has more than doubled in one year.

5. Not a winter resort has been discovered that does not claim it to be possible to reach there from New York or Chicago by automobile, though only a few claim good roads direct from those cities.

6. The average amount of excellent road available from the average winter resort is 209 miles.

To gather absolutely complete facts on the automobile situation at the winter resorts in Dixieland would take six men 6 months. For these resorts are scattered from just across the Virginia border down to Florida's farthest tip, to El Paso, Galveston and Corpus Christi on the southwest and Hot Springs, Ark., on the northwest, and they number, counting big and little resorts, away up in the thousands.

Touring Is on the Increase

It is possible, however, to gather information from some of the big resorts scattered through this territory and by getting the percentage of increase at these to get a pretty good line on the trend throughout the section. In gathering this information letters were sent to several hundred resorts and information obtained from a goodly proportion of them. It can therefore be taken as fairly indicative of what is happening at all of them.

At best it would only be possible to guess at the number of

cars that were shipped and driven South last year to the winter resorts. Five of the largest resorts reported a total of 1,070. Many of the smaller ones admitted that they had but three or four cars there during the season just closed. But with hardly an exception they agreed that there was increased automobile touring last season over the one before and the average increase was comfortably over 50 per cent.

That Northern car owners have little confidence in Southern roads is evident from the fact that 95 per cent. ship their machines by freight, express or boat all or part of the way into Dixie. Now that the National Highway, so called, from New York to Jacksonville, and the Capital-to-Capital Highway, which traverses a more easterly route, are becoming more of realities and less of mere names the percentage of those who drive down and back will steadily increase. To those who are familiar with those roads in dry weather the wonder is that more do not drive

through. For both are routes of wonderful scenic beauty and, in dry weather, offer most satisfactory roads. When you get rain in the South you get mud. But a party touring South can always abandon the tour at any railway station, ship their cars and go by train for the remainder of the journey.

The increase in the number of garages at the winter resort towns is one of the truest indications of the steady increase in Southern touring by northern visitors. The number of garages has almost exactly doubled in a single year. Most of these garages are open in the winter only and of course must do an immense volume of business in order to make the ventures pay.

The resort season just ended has been made notable by a steady improvement in the inter-sectional routes. The New York-Atlanta-Jacksonville route acquired something of a black eye at the hands of the Glidden tour. This luckless event, however, happened to strike Dixie when it was being deluged by most unreasonable and unseasonable rains. Naturally there were swollen streams and muddy roads. If a party had left New York, on pleasure bent, over the same route and at the same time they could have made the trip in comparative comfort. A few lay-overs would have been necessary, but if these had been made and a reasonable schedule maintained the trip could have been made in safety and comfort. This National Highway is being steadily improved. The people along the route see clearly what it means to them, in the long run, and they are working steadily. The same is true of the Capital-to-Capital highway.

The Southern resorts that attract the most attention from automobilists are those in Virginia. These are hardly true winter resorts, for their chief business is done in the fall and spring. Possibly Virginia Hot Springs is the leader. A garageman on the route from Hot Springs to New York reports that he averages housing from ten to twenty cars every night during the season and says that he does not get half of the travel. This condition obtains at all the Virginia resorts.

Pinehurst Favors the Tourist

Getting into the real Resortland there are fewer cars driven through and more shipped by freight. Pinehurst, one of America's greatest resorts, had 30 cars in the season just ending, against 15 the year before. Only a few were driven there. As this place is on the Capital-to-Capital route many cars pass through during the summer season. The average is estimated as two or three a day. It is on a first-class road to New York, but not on any direct route to Chicago, though several cars have traveled from Chicago to Pinehurst.

This resort is one that appreciates the possibilities of winter touring in the South, and its owner, Leonard Tufts, has done much toward promoting the Capital-to-Capital Highway scheme.

The only other resort of prominence in North Carolina, Asheville, is

rapidly extending good roads. There are at least 200 miles of rain-proof macadam available now and a good connection has been established with the routes to New York.

Of the Georgia winter resorts Augusta is the most important and at that city the fashion of automobile touring was set by no less a personage than President Taft, who usually spends his winters there and who is never without a car or two, for use over the excellent roads. John D. Rockefeller is another Augusta automobilist each winter.

Though Augusta can easily be reached from Atlanta, the Bon Air Hotel reports that of the 50 automobiles it averaged each month in the winter not one was known to have come through from the East under its own power. However, there was a vast amount of automobiling, for the roads of Richmond County are excellent.

Florida Has Many Tourists

From the South Carolina resorts come similar reports. This state was plagued, as was the whole South for that matter, with rains all winter, which made the sport of automobiling rather less pleasant than usual. All through the state, however, there is an active movement for better roads, and it is being strongly backed by the owners of the winter resorts.

Florida, strange to say, ranks next to Virginia in the amount of winter automobiling. This state of "millionaire tourists" was literally covered with motor cars last winter.

The favorite method of getting cars into Florida was to ship to Jacksonville and then drive through. The manager of the Ormond Garage, at Ormond, Fla., reported that during the season they cared each night for from 25 to 40 cars that were driven there from Jacksonville and from nearby resorts. That city is especially favored in having the famous Ormond-Daytona beach, of racing fame, within reach, and it is used steadily all winter. It is possible to use the beach in trips south and west and there is also a shell road stretching southward, through Port Orange, New Smyrna and Oak Hill.

The road from Jacksonville through historic St. Augustine and to Ormond has been materially improved in recent years. One tourist reports making the 90-mile run in 5 hours and 20 minutes this year, while in 1907 the same trip took 3 days, not to mention heroic work in fording creeks, cutting trees and borrowing mules to help the car through the swampy places.

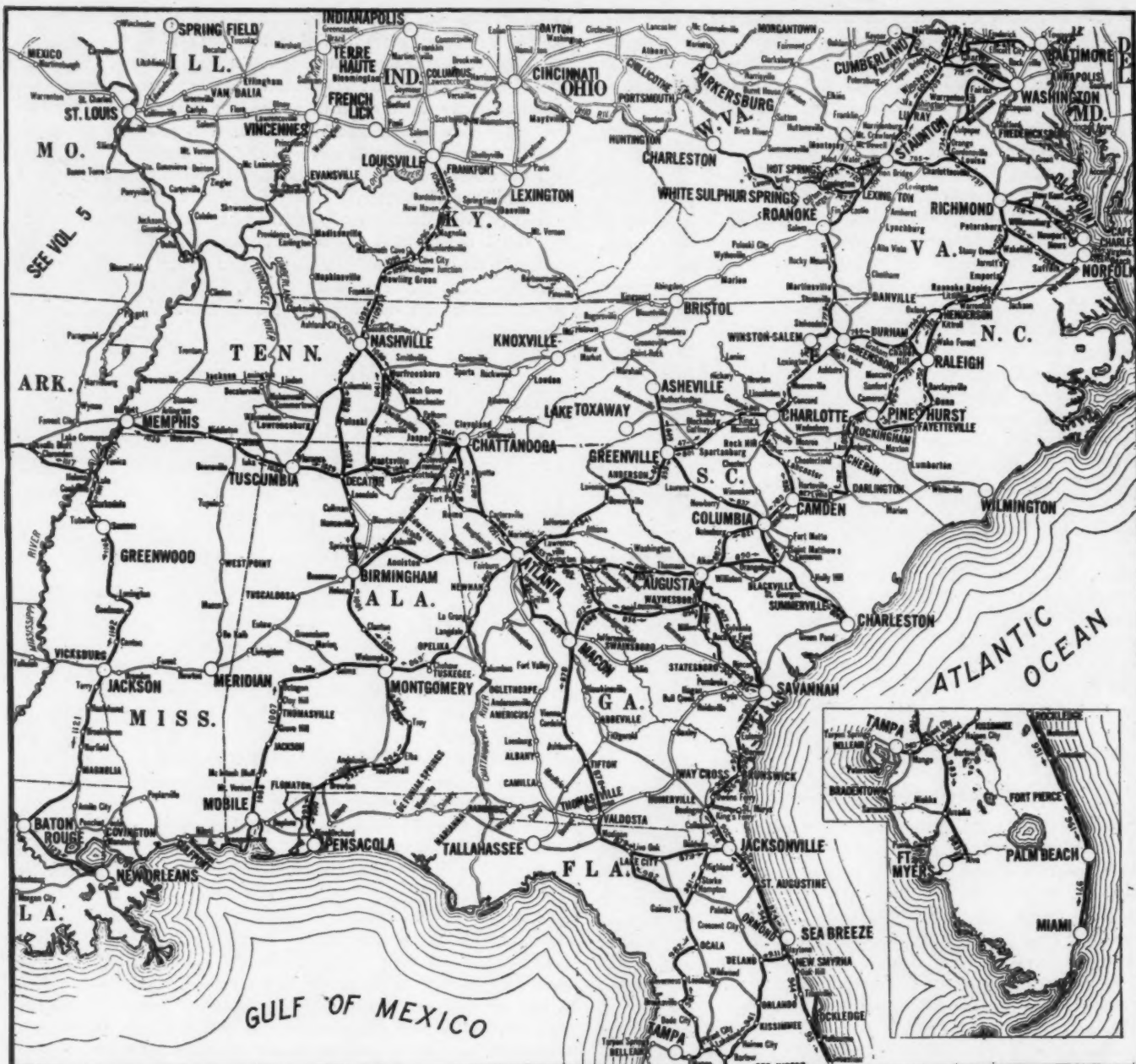
Tampa, on the west coast of Florida, housed about 350 cars owned by tourists in the short winter season. And all but four or five were shipped to Jacksonville and driven through. This has been one of the real headquarters for automobilists, and with a movement on foot to connect up all the hard-surfaced roads in the various sections of the state, with work progressing which will connect Tampa with the National Highway, and with excel-



Road through pine forest at Pinehurst, N. C.

(Circle) Through an orange grove in Florida

Inspecting the new road near St. Augusta, Fla.



Map showing that section of the South where winter touring is becoming the vogue. The routes in black are those generally followed (Courtesy of Blue Book)

lent roads to Tarpon Springs, 30 miles; Largo, 35 miles; Lakeland, 50 miles; Bartow, 50 miles, and a dozen other points at less distance, it is easy to guess that winter automobiling will always be a big factor of resort life at Tampa.

The east coast resorts are not overlooking any chances either, and inside of five years Florida will be a real Mecca for winter tourists.

The big hotels of larger cities of the South are beginning to look alive at the chance of winter business from automobilists. The new resort hotel at Atlanta has had a steady patronage from automobile tourists and has added a fleet of touring cars of its own, for rental to its guests. Savannah, which has one resort hotel now, another under construction and a big subdivision especially for winter visitors, is making much stock of the well known excellence of its roads and reports a tremendous number of automobile tourists. In the county in which Savannah is located virtually all of the roads are as good as those over which three Grand Prize events have been run and the city offers as much as any in America in the way of scenic and road attractions.

Richmond, Va., is another big city which is making a bid for

automobile patronage. At present a company is being organized, under the title of the Richmond-Washington Highway Corporation, capitalized at \$150,000, to build a memorial highway, in memory of the Confederate generals, between Washington and Richmond, by way of Fredericksburg. The route will be 135 miles long and will offer opportunities for an ideal tour. This road, and its terminal, Richmond, are peculiarly rich in historic interest. And from Richmond short trips are possible to Fortress Monroe, Newport News, Norfolk and other points of historic and scenic interest.

The winter resorts of Arkansas, Mississippi and Texas are not as yet catering much to automobile tourists. They cannot be reached in comfort from the East and North, for the roads are practically impassable in bad weather and not very good in good weather.

Gulfport, Miss., now one of the big Southern resorts, reports 15 cars brought there by tourists last winter and 55 miles of first class road. The projected road from Mobile to New Orleans will mean much for the Gulfport hotels, and when it is completed many tourists will ship their cars by boat to New Orleans and drive them to Gulfport.

Chauffeuse-Chaperoning

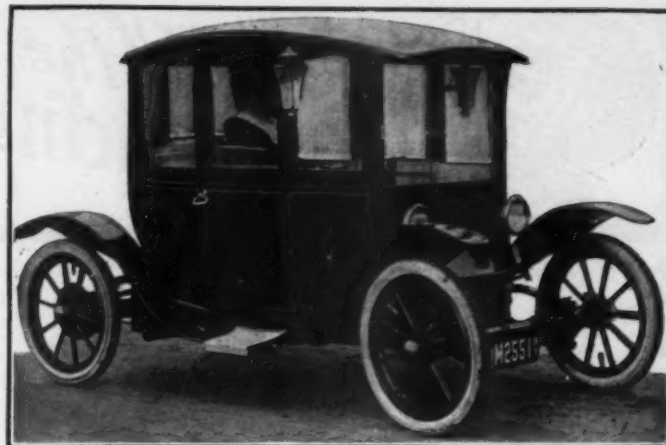
New York Woman Embarks on a New Venture Which Promises to Meet With Great Success

Starting with One Electric Car, Growth of Business Now Necessitates Three

THE automobile has again proved its usefulness by providing an agreeable and remunerative occupation for one who loves it. The case in question is that of Mrs. Alice Waxham, 2 West Ninety-fourth street, New York City, who has returned to New York a few months ago after a several years' stay in Denver, Col., where her husband was a physician.

Mrs. Waxham has been one of the first women automobilists in this country, and has ever since then remained true to the horseless vehicle. She first made the acquaintance of the automobile about 12 years ago and was immediately so enthused with it as to buy the first Stevens-Duryea sold by the manufacturer. Since then she has driven more than half a dozen cars, both gasoline and electric vehicles, and has visited a number of factories, thus being conversant with the construction as well as the manufacture of automobiles.

Having come to New York and thinking of making a livelihood, Mrs. Waxham conceived the idea of the *chauffeuse-chaperone*. She devised the following scheme which was to provide profitable outdoor work for her, at the same time keeping her in contact with none but good company. She decided to buy an electric and drive it, using it exclusively for such work as driving ladies, and ladies only, to the theater or to church, to take out convalescents, to bring ladies to their places of shopping, and the like. The demand for such work became obvious with her when stopping at a prominent hotel and seeing numerous ladies annoyed by the necessity of using taxicabs whenever they went out. Struck with her idea, she confided it to a number of business men among her acquaintance, and received encouragement from every one. She then started with one electric, and, to make a long story short, succeeded in spite of the principles of concentration of capital and survival of the wealthiest taught by the radical political economists. Up to this date her clientèle has grown to such a degree that she now operates three electrics and is assisted by two lady college graduates. Mrs. Waxham now contemplates having a small garage of her own built and starting its operation with renewed vigor next fall.

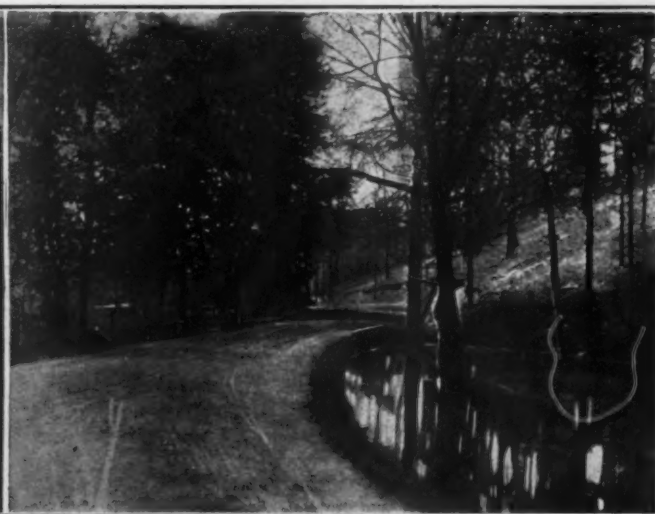


Mrs. Alice Waxham, the chauffeuse-chaperon, and her electric

She is very positive in elucidating the advantages of electrics for town use, more especially for the service of ladies and principally for theater and kindred work, because with an electric there is practically no chance of a soiled dress. Besides, the easy and comfortable driving of an electric is naturally a great attraction to a lady driver and the possibility of abrupt and positive stopping in city traffic is another argument for such service.

Mrs. Waxham is a touring enthusiast and expects to make a tour to Boston and through New England this summer or next. In this tour she will use her new electric sedan. While this tour is to be something of a pioneer stunt, Mrs. Waxham believes she will not long stand alone as an electric-car tourist, as the number of electric charging stations throughout the land is continually on the increase. She also states that the electric has a much stronger hold on the West than it has in the East, but that she is convinced that the latter section will soon awake to the possibilities of this type of automobile.

Paris Salon, 1912.—All demands for space at the automobile salon to be held in Paris December 7 to 23 this year must be received by the committee of organization before July 1 and must be written on the blanks furnished by the committee for this purpose. The committee reserves the right to refuse demands for space at its discretion and without giving an account of the motives for its decisions. The secretary of the committee is Mr. H. Cezanne, who is also secretary of the *Chambre Syndicate des Constructeurs d'Automobiles*, and may be addressed in care of the Automobile Club of France, Paris, under whose auspices the exhibition is organized.



Two of the beauty-spots to be found near Asheville, N. C.—Swannona Lodge road and Sunset drive

Digest of the Leading Foreign Journals

Rotary Valve Motor of Italian Firm Found Good Enough to Make and Market— Its Salient Features of Construction—A Simplified Double-Jet Carbureter— Shielding the Bared Eyes by Cross-Currents of Air

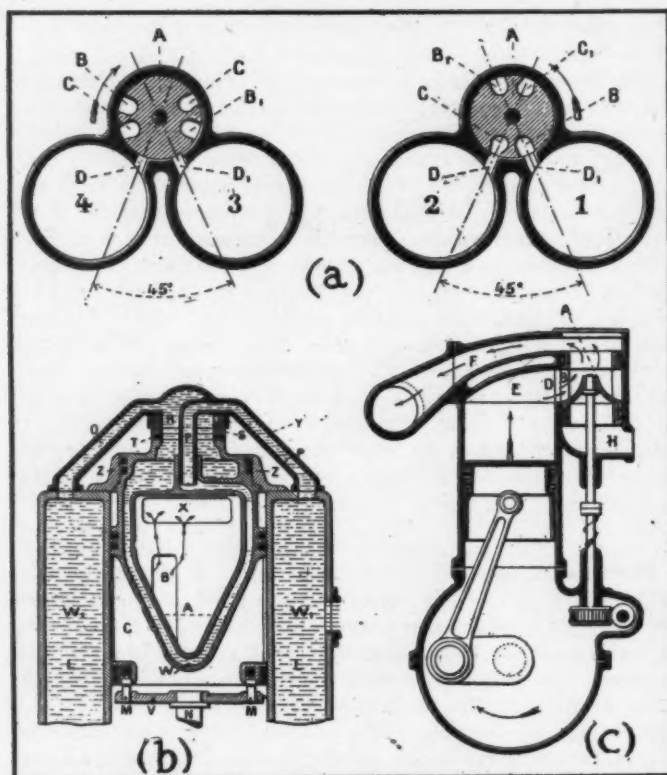


Fig. 1—(a) Diagram showing relative portions of the distributor and its valve channels to the cylinders; (b) Section of the rotary distributor; (c) Diagram of cylinder in new Itala motor, showing position of parts during exhaust stroke

ITALA Rotary Valve Motor—Tests of the motor which the Itala company exhibited at the Olympia show, last year, have led to a definite adoption of a similar type of motor for a 25 and a 35-horsepower model, both to be manufactured in series, and a description of the valve mechanism in these motors may therefore be considered of general interest. Each pair of cylinders has cast with it, in the relations plainly shown in the illustrations, a third chamber with an opening to each of the two combustion chambers of the cylinder and communicating at the top with the exhaust pipe and at the bottom with the induction tube. In this chamber rotates the distributor actuated by a vertical shaft which in turn is driven, on an end-thrust ball bearing, by a worm gear in the crankcase giving the distributor one turn for four turns of the crankshaft. The reduced speed facilitates the lubrication. Each distributor has two apertures for the admission and two for the exhaust, those of each pair being diametrically opposed. Drawings showing the exact arrangements and dimensions of parts are not yet obtainable for publication. A provision for offsetting gas pressure against the distributor body—which should result in wear

on the opposite side and possibly in lubrication troubles and gas leaks—takes the form, it is stated, of small transverse holes through the distributor body which, from the beginning of the working stroke to its end, permit the gas pressure to pass through to the opposite side of this body, where a shallow cavity in the wall permits it to exert a counter-pressure.

[This sounds mysterious, as a small hole, said to be a few millimeters in diameter, would not transmit pressure very rapidly and, in fact, would operate as a reduction valve; but French publications are prohibited by law, under risk of heavy damages, from making any unauthorized statements about a commercial product which could possibly be construed as derogatory.—Ed.]

It is shown in Fig. 1a how the distributor, by turning 45 degrees around its vertical shaft while the motor shaft turns 180 degrees—a half revolution—can serve two contiguous cylinders. The firing sequence is 3, 4, 2, 1, and the valve channels marked B₁ and C₁ simply repeat the functions of those marked B and C.

The method adopted for cooling the distributors is shown in Fig. 1b, which gives diagrammatic section of the distributor in relation to the adjacent portions of the water jackets of the two cylinders which the distributor serves. A tube *p* passes from the jacket of that cylinder which is first in the water circulation into the space formed between the double walls of the rotary distributor body, and the water is forced to pass around this and upward into another tube *o* leading to the water jacket of the next cylinder. The tubes *p* and *o* are formed as a single bronze casting which bridges over the top of the distributor. The water-joint necessary for reconciling the rotation of the valve with the circulation of the water consists of a fiber washer *t*, on which rests a stationary steel washer *s*, pressed down by means of the rubber ring *a*. No lubrication is considered necessary between the steel ring and the fiber.

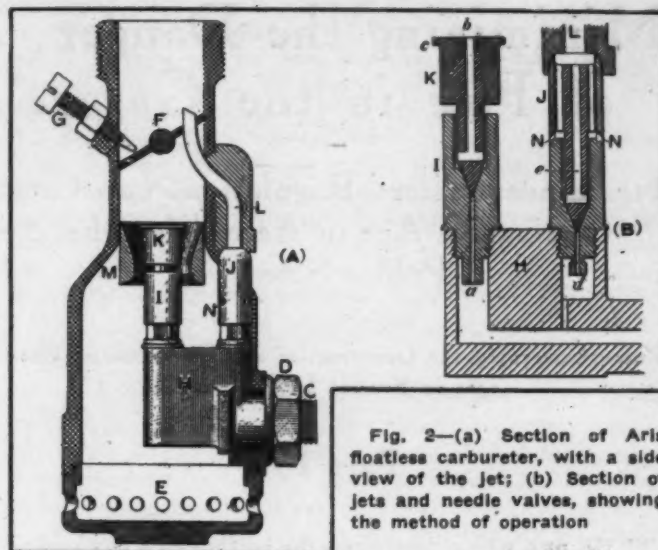
The top of the vertical shaft driving the valve is shown at *n*. It carries an arm *v* with two dogs *m*, which enter in holes recessed in the bottom of the valve body. When the dogs fit in these holes the valve openings are in their right position, so that dismounting and remounting of the valve may be made without trying and testing for adjustment. At the middle of the shaft *n* an Oldham joint is provided. It is made of brass and its driving vanes are made so weak as to break if any unusual resistance to the rotation of the valve should occur by reason of failing lubrication. In this case the two cylinders cease functioning, the operator dismounts the valve with the top portion of its shaft, removes the cause of trouble, replaces the Oldham joint with another one which he carries with him in the car, remounts the mechanism and proceeds. A special force-feed lubrication of the valve body is provided, but this is among the features of construction withheld from publication. —From *La Vie Automobile*, April 27.

Aris Floatless Carbureter.—In this inexpensive construction the constant-level float chamber has been dispensed with, and its place is taken by a heavy needle valve which closes the fuel entrance by its own weight, but is formed with a large

head to make it sensitive to the suction from the cylinder which raises it from its seat. Its place in the contracted portion of a short Venturi tube also facilitates the lifting of it, and it is, moreover, not required to act at the starting of the motor or when the motor is operated idle under the throttle, another needle valve in that case coming under the influence of the suction. The second needle valve is relatively light and provided with a separate small air-intake so proportioned as to make the mixture from this valve very rich in fuel. In both valves the pressure-flow of the gasoline acts as a constant factor assisting the engine suction and, to a certain extent, equalizing its variations. The accompanying illustrations, Fig. 2, give a section of the carbureter as a whole with the jet in side view and, to the right, a section of the jets and needle valves. The gasoline pipe is joined at C by the nut D to the hollow body H into which are screwed the central jet I for the main needle valve K and the second jet J for the secondary needle valve.

In the main jet, when the needle valve is raised, the gasoline standing under pressure in the bore *a* in the jet flows around the body of the valve and at the same time through lateral openings into the bore *b* of this valve body, thus effecting a fine division of the fuel which is vaporized in the air current drawn in through the air apertures E along the bottom edge of the carbureter. But if the throttle valve F is closed, as in the position shown in the illustration, the suction from the cylinder cannot reach openings E and takes effect through tube L, which leads to the secondary needle valve in jet J. The gasoline arrives to the bore *d* of this jet through a narrow boring H, so that the pressure is strangled, but the jet is provided with lateral holes N admitting some air. The best closing-position for the throttle valve F is determined by adjustment of the setscrew G. —From *Omnia*, May 4.

Deflectors as Windshields.—Experiments have been made by a Mr. Eysseric to determine by what form of windshield the driver of an automobile may protect his eyes against wind and dust without the formation of lateral eddies of air and without placing his eyes directly behind the shield, thereby, in the case of rain or snow, obstructing his line of vision. To enable the driver to dispense with goggles was also an object of the inquiry, but incidentally the results of the investigation suggest the possibility of shaping goggles or a face mask so as to leave the vision free and yet protecting the eyes, while at the same time dispensing with the windshield, on the principle that the rest of the person may be protected more conveniently by suitable clothes. The shape of windshield which was found most effective reminds one considerably of the reclining and concaved celluloid shields, in steel and leather framing, which are commonly seen in use and which do not extend above the level of the driver's face, being designed on the same plan which Mr.



Eysseric is aiming to perfect. His data favor a design in which the lower and larger portion of the shield slopes backward at an angle of more than 60 degrees and may be concaved or not; but the essential part is a narrower panel which is adjustably hinged to the upper edge of the sloping portion, and this part must be concaved and must be leaned forward at different angles, the adjustment depending upon the velocity of the air current which the speed of the car and the wind combine to produce. Ordinarily this concaved panel must be tipped to a position in which its concavity is focused—if this term may be used—upon the ground immediately in front of the car. Its action to shelter the face of the driver is not noticeable, but also not required, until the velocity of the air current reaches about 10 feet per second. As the speed of the car is increased, the forward angle of the panel may be reduced. The sheltered region is limited by a curve which resembles a parabola and extends upward and backward from the edge of the shield, and in this region the driver's face is protected not only against the air current, but also against dust and other particles suspended in the air. In other words, the resultant of the air current caused by wind and motion in the ordinary manner and of the upwardly directed deflecting-current caused by the position of the deflector-panel, is found to be just what might have been expected, namely, an upwardly inclined current which clears the driver's head. The concavity of the panel serves mainly the purpose of giving strength and definition to the upwardly deflected air, having an effect, as in aeroplanes, to prevent lateral escape of the air and the formation of irregular eddies. If a plane adjustable panel is used instead of a concaved one, the height of the sheltered region, above the edge of the shield, is much reduced and in some cases the sheltering effect is even totally lost. On the other hand, the effects of a rigid concaved panel—it must not be made of slack material—if it is held at the proper angle, are obtained even if the air current strikes the front of the car at an angle of 45 degrees with its direction of motion.

No experiments have as yet been made, or at least not published, to ascertain if a face mask may be designed on the same principle, in which case it should perhaps be made with a concaved and forwardly inclined edge portion immediately under the eyes, a perfectly unobstructed slit allowing periscopic vision and an upper edge of material, a little farther back than the lower edge, to catch the deflected air current.—From *La Technique Aéronautique*, January 15 and February 1.

Easier to Sell Automobiles in Chile.—By a recent enactment of the Chilean parliament the import duty on complete automobiles has been reduced from 60 to 15 per cent. ad valorem. The reduction goes into effect 60 days after February 13.

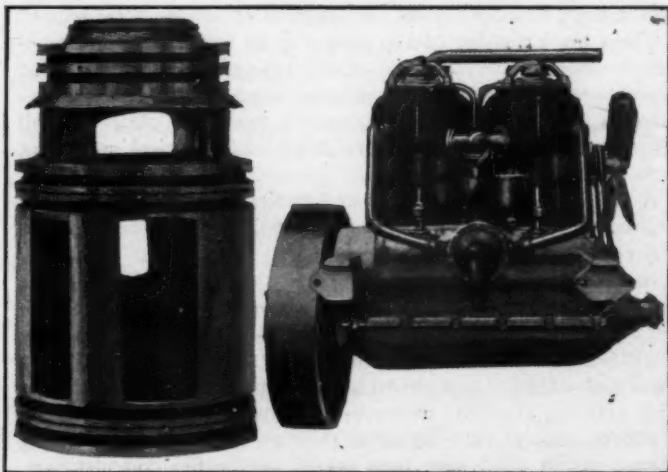


Fig. 3—Body of rotary distributor valve in Italia motor
Fig. 4—The complete 4-cylinder motor

Minimizing the Danger of Fire in the Garage*

Fire Underwriters' Regulations and City Ordinances Are in Accord for the Public Safety

Rules Governing the Construction and Operation of Garages in Several Large Cities

Part IV

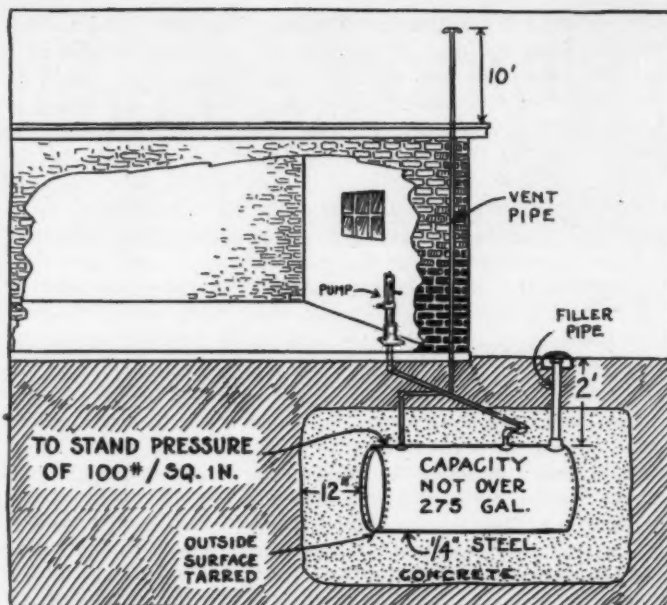
THE man who contemplates the building of a city garage should first either thoroughly familiarize himself with the regulations of the fire underwriters and the building ordinances which apply to such constructions, or retain the services of an architect or builder who is conversant with them. If he is remodeling a building which was not originally intended for garage purposes, it is equally important for him to assure himself that he is not encroaching upon any of the stipulations governing such operations. These matters are of the utmost importance if a permit from the city building authorities is to be obtained, and if, when the building is completed, the lowest possible rates are to be given by the fire insurance underwriters.

Such matters as the storing of gasoline, the position of the electric lights and other electric apparatus and the rules in regard to the filling of cars within garages are carefully considered and much stress is laid upon them by underwriters' rules and city ordinances. In fact, so stringent are the regulations that in some instances plans have had to be altered after the structures were well under way in order to meet the fireproofing requirements of the insurance companies. One case in particular is recalled where an automobile concern in the city of New York recently constructed a large modern service station and garage. The building has been made as nearly fireproof as possible, but the members of the firm became so disgusted with the opposition of the underwriters and with their interference and dictation as to certain structural details, together with the delays and revisions of the plans upon which these insurance companies insisted, that they (the owners) decided to overthrow this outside interference and to finish the structure as they, in their experience, thought best. Consequently, this firm is today carrying no insurance whatever on the property, and with its latest type of fireproof building is assuming its own risks of fire, etc., in preference to changing the construction to suit the underwriters and paying them large annual premiums for taking the responsibility of losses.

Companies Favor City Ordinances

Sometimes the regulations for garages take the form of city ordinances, while at other times they are conditions laid down by the insurance underwriters. However, in many cities there are municipal restrictions as well as those of the underwriters. This is the case in New York City, where garages must be constructed and maintained according to the requirements of the Municipal Explosives Commission; and the New York Board of Fire Underwriters exacts that its risks be safeguarded by practically the same rules. This is nearly always the state of affairs, although in some cities there are no municipal regulations at the present time, the only restrictions with which the builder has to deal being those set down by local underwriters.

*This is the last of a series of articles on Automobile Insurance.



The underground gasoline storage system as required in the City of New York

The insurance companies are very active in endeavoring to get the cities in which there are no municipal regulations to adopt the rules and regulations which they impose for structures which they underwrite. With this two-fold means of producing as nearly perfect buildings from the standpoint of their proof against fires as possible, there is no reason why those structures which are used for garage purposes should not be as safe as any.

Wide Variation in Regulations

There is no uniformity to the ordinances or insurance regulations for garages in different cities, although cases are to be noted where several localities have the same or nearly the same regulations. One of the most widely adopted set of rules is that relating to the manner of storing gasoline. Practically all authorities agree that it is dangerous to store this explosive within the building in any quantity, and the underground storage arrangement is almost universally required. There is considerable variation as to the depth to which the storage tank of such a system must be buried, and also as to the thickness of the cement casing, if any, which must surround it. The regulations in some cities even go so far as to state the composition which the cement used must have.

Vent and filling pipes for these underground tanks have been given considerable attention. In most cities, the vent pipe must run up to a height at least 10 feet above the roof of the garage and it must be capped with a goose-neck or similar arrangement.

There are a number of stipulations as to the amount and manner of storing acetylene and lubricating oils. Much attention has also been given to the lighting arrangement. There are regulations as to the minimum distance from the floor to wall switches, incandescent bulbs, arc lights and electrical apparatus, such as motors and generators.

A few of the more important underwriters, regulations and city ordinances relating to garages in a number of the larger cities will not be out of place here.

In Greater New York the construction of garages is under the supervision of the Municipal Explosives Commission, the requirements of which are largely the same as those of the New York Board of Fire Underwriters, as already mentioned. It is made unlawful for any person to store, house or keep within the City of New York any motor vehicle containing volatile inflammable oil, except in a building, shed or inclosure for which a garage permit shall have been issued by the fire commissioner. The building plans must accompany the application for permit, and the location, name of the owner and his address, nature of

the construction, maximum number of motor vehicles to be stored within, the maximum quantity of volatile and inflammable oils and the greatest amount of calcium carbide to be stored must also be tendered to the authorities.

In putting gasoline in automobiles, either a portable tank must be used, or the oil must flow directly from the outlet of the drawing-off pipe into the vehicle tank.

Gasoline storage tanks in New York must be constructed of steel at least $\frac{1}{4}$ -inch thick; they must have a capacity not over 275 gallons and must withstand under test a hydrostatic pressure of at least 100 pounds per square inch. They must be coated on the outside with tar or other non-rusting material, rest on solid foundations and be embedded in and surrounded by at least 12 inches of Portland cement concrete. This concrete must have the following composition: two parts of cement, three parts of sand and five parts of stone. The tops of the tanks must be set at least 2 feet below the level of the lowest cellar floor of any building within a radius of 10 feet of them. No tank can be placed under a sidewalk, nor in front of the building line.

Tanks must be fitted with filling pipes, draw-off pipes and vent pipes. However, those which are installed as part of hydraulic systems are not required to be fitted with vent pipes. The filling pipe must be at least 2 inches in diameter and laid on a descending grade from the sidewalk in front of the garage to the tank, and there are detailed provisions as to the closing of the intake when not in use. The vent pipe must be at least 1-inch in diameter and it must run from the tank to the outer air at least 10 feet above the roof of the garage, and at least 10 feet from the nearest wall of any other building. It must also be braced in position and capped with a double goose-neck, hood or cowl with a screen of two thicknesses of 20-mesh brass wire gauze placed just below the goose-neck.

Some of New York City's Rules

As to the portable tank, the New York requirement is that it must not have a capacity over 55 gallons and must be mounted on an iron or steel frame having rubber-tired wheels. Gasoline may be discharged from the portable tank only through a hose not less than 16 feet in length, a shut-off valve being provided at the nozzle or outlet.

In receiving gasoline from the oil company, the garage is not allowed to admit the supply wagon within its building; the filling of the storage tanks must be done through the filler pipes from the outside. Oil cannot be stored in garages in New York in barrels under any circumstances. Provision is also made for the removal by sponging or swabbing of any oil which is spilled on the floor of the garage, so exhaustively have the great city's authorities gone into this important matter of fire prevention.

No system of artificial lighting other than incandescent electric lights is permitted by New York's Explosives Commission, except if the system be of a type for which a certificate of approval shall have been issued by the fire commissioner. It is further stipulated that all incandescent lamps be provided with keyless sockets, and that all electric switches and plugs be placed at least 4 feet above the garage floor.

No stove, forge, boiler, torch, flame, or fire, and no electric or other appliance which is likely to produce an exposed spark can be installed in a garage, unless it is placed in a room or compartment which is separated from the main part of the garage by fireproof walls and floors.

In addition to fire buckets filled with sand and a quantity of the same material on the floors to absorb waste oils, each floor of a garage must be equipped with

self-closing metal cans in which all inflammable waste material must be deposited until removed from the building. Calcium carbide must be kept in water-tight metal containers with securely fastened covers, the quantity on hand at any one time not exceeding 120 pounds.

A person holding a garage permit in New York which is issued in accordance with the provisions for garages is not required to obtain an extra permit to operate a motor vehicle repair shop, but if a permit to operate the latter alone is given, the holder is not allowed to store or sell gasoline or inflammable oils, nor is he permitted to bring within the shop any vehicle containing volatile inflammable oil unless that portion of the building in which the shop is located is constructed of fire-resisting material throughout.

Chicago Regulations Complete

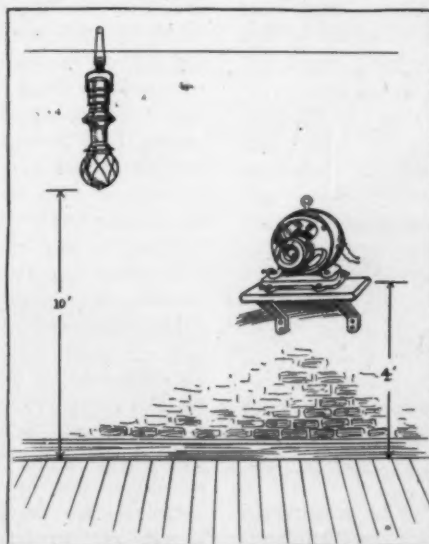
The Board of Underwriters of Chicago orders that gasoline tanks must be buried 2 feet below the surface of the ground, and as far from the building as possible, *preferably not less than 30 feet*. According to their rules, stationary tanks may be located inside garages, but they must have a total capacity not greater than 300 gallons when so placed. The thickness of metal of these tanks must not be less than No. 14 U. S. Gauge (5-64-inch) for capacities up to 180 gallons, and not less than No. 12 gauge (7-64-inch) for capacities of 181 to 300 gallons. The material must be of galvanized steel, open hearth steel or wrought iron. Tanks must be coated on the outside with tar, asphaltum or other rust-resisting material, encased in jackets of at least 6 inches of concrete and buried with their tops at least 2 feet below the upper surface of the concrete floor of the basement (or first floor in absence of basement). The filling and vent pipes of such tanks must be run under the concrete floor until they reach the outside of the outer wall of the building.

The rules in regard to the vent pipes, filler pipes and draw-off pipes are identical with those which apply in New York. If vehicle tanks are filled inside the garage, they must be either connected to a pump or approved portable tank by not exceeding 8 feet of tubing or hose. The New York regulation states that not more than 16 feet of hose may be used.

Gasoline cans stored on holders attached to walls of buildings in Chicago must have an aggregate capacity not exceeding 10 gallons and they must be of approved safety type, supported by metal shelves having metal retaining guards, or metal boxes or metal lattice enclosures securely fastened to the outside surface of exterior brick, concrete or stone walls. More than 10 gallons of fuel may not be stored outside a building unless in the underground tanks already mentioned.

As in New York, the Chicago ordinances state that if open lights are used, the rooms must be completely isolated from gasoline vapors. Calcium carbide, if carried in stock, must be kept in approved metal cans, while the rules for the storage of acetylene gas are especially restrictive. Acetylene tanks must be of approved design and not more than five can be carried in stock, exclusive of those on cars, if they are stored in the open. If, however, they are kept in specially constructed receptacles as set down in detail in the rules, the number may be increased to 25.

The various methods of handling gasoline in the territory under the jurisdiction of the Philadelphia Fire Underwriters' Association are made conditions of the rates for such risks, the lowest charges being made, of course, where no gasoline is permitted within a garage, except that contained in the tanks of the automobiles, where no filling is done within, and where the quantity of gasoline is restricted



St. Louis requires arc lamps to be at least 10 feet above floors; electrical motors, 4 feet

to a maximum of 50 gallons in an approved underground iron or steel tank located at least 10 feet away from the building. No artificial light is permitted in garages other than incandescent electric lighting installed in accordance with the National Electrical Code. As in the cities already mentioned, sparking devices must be kept away from portions of buildings which are subject to gasoline fumes.

The Philadelphia Association further provides that heating should be by either a steam or hot water system, the boiler being so located that it will be absolutely cut off from that section of the building in which vehicles are stored or gasoline used. By regulations similar to those in other cities, it is advised that gasoline be not used for cleaning purposes, nor repairing or testing be done on the premises. If done, the arrangement should naturally be such that the probability of ignition of gasoline vapor by forges or other flames will be reduced to the minimum.

In St. Louis, the requirements of the Fire Prevention Bureau and of the city ordinance regulating garages are in accord. No building exceeding one story in height may be used as a garage unless it is a building of the first class. The floor must be either of concrete or granitoid. If the building has a basement, the latter must not be used for the storage of cars, for repair-shop purposes or for storage of gasoline.

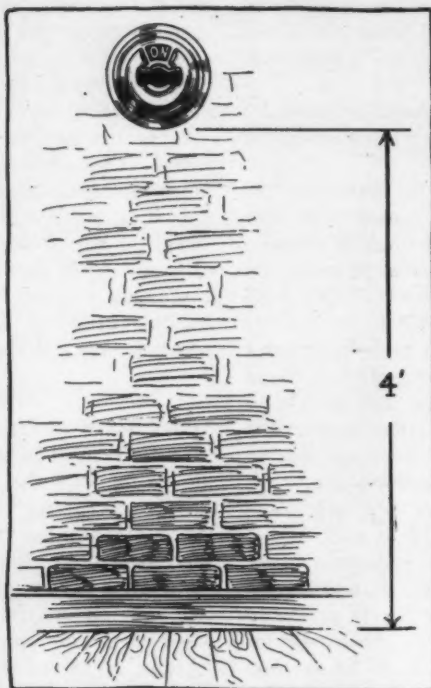
The St. Louis ordinance also requires that all electric motors and generators (not parts of any of the cars) be placed not less than 4 feet above the floor, that incandescent lamps be properly incased in vapor-tight globes and protected by wire guards, and that all arc lamps be of the inclosed type at least 10 feet above the floor. All switches and plugs must be placed at least 4 feet above the floor, to prevent sparks igniting oil on the floor.

Garages which have pumps within attached to storage tanks, must inclose such pumps within special compartments or inclosures constructed of wire mesh screen. In filling cars, either portable safety cans not exceeding 5 gallons in capacity may be used, or portable tanks of 65 gallons maximum capacity having specifications similar to those required of this type of apparatus in New York. On entering a garage, all automobile lights must be extinguished within 10 feet of the threshold, and they must remain out until the car is ready to leave and is within 50 feet of the exit. Gasoline or other inflammable, volatile liquid can not be used for cleaning purposes, and the regulations as to sanded floors and fire buckets are similar to those in force in New York. Self-closing metal cans set firmly on 4-inch legs must be kept on every floor of a garage; one can for each 2,500 square feet of floor space. Into these all inflammable waste materials must be deposited. The St. Louis ordinance further states that calcium carbide must be kept in the pump compartment and at least 6 inches above the floor in air-tight containers provided with securely fastened covers.

Must Use Fireproof Materials

A city ordinance of New Orleans covers the construction of public and private garages, and at the time of preparation of this article there is another ordinance pending before the city council for the regulation of the storage of gasoline. Details of the latter are not yet available.

Garages in this southern city are required to be constructed of fireproof materials, although existing non-fireproof buildings in certain areas may be converted into garages when precautions, such as the installation of standard systems of automatic sprink-



Most cities stipulate that electric switches shall be at a minimum height of 4 feet

lers, and so on, are taken. Private garages within 10 feet of houses must be fireproof and must have all their outside wall openings protected by standard fire doors, fire shutters, or wired glass windows in hollow metallic frames. Those private garages which are placed more than 10 feet from dwellings may be of any construction other than composite, but the floors must be of concrete, and any openings which are within 30 feet of a house must be protected by fire doors, or their equivalent, as mentioned above.

Garages in the territory covered by the Buffalo Association of Fire Underwriters are divided into two classes; one is the private and the other the public garage division. In the former, it must be warranted that not more than three cars will be housed in a building. The distinction between the two is made merely because a much higher insurance rate is attached to the latter class. The cleaning of any automobile with gasoline or other volatile oil is also prohibited by these underwriters in any insured garage, and the filling of the gasoline tanks of machines while within is likewise frowned upon. Light blazes and fires, and any form of artificial illumination other than incandescent electric, are prohibited in the usual way in any room or communicating room in which gasoline is to be found.

Any of the Buffalo regulations will be waived by the underwriters upon payment by the insured of additional premium sufficient to cover the increased hazard. Gasoline storage is recommended to be of the underground type, the top of the storage tank being not less than 3 feet below the ground level. No restriction is imposed as to the handling of or storage of lubricating oils. The requirements of the National Electric Code as to electric work must be adhered to.

Minneapolis Strict on Storage

The Association of Fire Underwriters of Baltimore City has regulations which do not differ materially from those in Buffalo. Gasoline restrictions are much the same. Storage is recommended to be of the underground type; top of tank 3 feet down; tank 6 feet from building line. Electrical equipment must be in accordance with the rules of the National Board of Fire Underwriters.

The building ordinances of Minneapolis state that whenever any floor of any building is used as a garage and the floors above are used for living or club purposes, the floor over the garage must be of fireproof construction and all stairways or openings leading from it to the upper portions of the building must be inclosed within fireproof walls. Doors in such openings must be fireproof also, and arranged to close automatically. No regular repair shop may be operated in connection with such a building, in any case. All garages in Minneapolis which are to be more than two stories in height must be of fireproof construction, unprovisionally.

The Minneapolis law relative to gasoline storage stipulates that not more than 10 gallons may be stored in any building. This must be in closed metallic cans, not exceeding 5 gallons capacity each. They must be filled by daylight, or electric light only. An amount not exceeding 60 gallons may be kept in metal tanks under fireproof cover outside any building, while 200 gallons may be stored in metal tanks within a building used exclusively for the purpose and which is well ventilated at the bottom and 10 feet distant from any other structure. Five hundred gallons may be put in one or more underground tanks having proper vent, filler and draw-off pipes, when such tanks

are at least 10 feet from all buildings and have no connection with any. A quantity not exceeding 600 gallons may be kept in an underground tank 4 feet below the ground level and 2½ feet from a building, with a pipe leading to a pump within. These requirements are seen to vary somewhat from those outlined for other cities, especially as to the quantities permissible, and as to the use of gasoline outhouses.

The city ordinances of Los Angeles will not permit the use of air- or water-pressure gasoline storage systems. Pumping arrangements only can be used, tanks being of heavy steel or iron and located outside of, and not nearer than 5 feet to any building. Brick or reinforced concrete must be used for the walls of all public garages. The tops of storage tanks must be 4 feet underground, and vent pipes must not be less than 1 inch in diameter, and carried on the outside of walls to 5 feet above the roofs (10 feet in most other cities). Approved pumps may be installed within the buildings, but where the filling of automobiles is done, partitions which may be of wood, metal-lathed material, concrete or brick must subdivide the filling rooms from the repair shops.

Los Angeles Requires Permits

In Los Angeles permits must be obtained from the Board of Fire Commissioners before a garage may be erected or gasoline used, and the plans of each building and tank or tanks submitted to the fire marshal. This course is necessary before a permit is finally granted from the building department of the Board of Public Works. In this manner the building of all garages has been supervised by the Fire Underwriters' Inspection Bureau, the members of which are also deputy fire marshals, being appointed by the chief of the fire department. The arrangement has proven its value in this California city, and it meets with the approval of owners and tenants.

At present the local city ordinances of Salt Lake City are very incomplete and cover buildings only in a general way. No provisions have been made for the handling or storage of gasoline, for the installing of electric wiring, and the like. Consequently the Board of Fire Underwriters of the Pacific under whose jurisdiction the city comes, can only co-operate with the public in an advisory capacity, and where conditions are not considered safe, a penalty charge in the insurance rate is made to encourage better conditions.

Providence, Rhode Island, has good city ordinances relating to gasoline and automobile storage. Not more than 5 gallons of any volatile inflammable product may be kept unless by permission of the fire commissioners, who must first be furnished with a statement of the maximum quantity to be stored, the method of storage and so on.

The Providence city building law requires that a garage shall be either of fireproof construction or of mill construction, but

such buildings as are built in the latter way must not exceed one story in height, or 5,000 square feet in area in the first district, and not more than two stories in height or 8,000 square feet in area in the second district. These districts are simply territories as laid out by the city authorities and bounded by certain streets. All mill-constructed buildings must be equipped with approved systems of automatic sprinkling.

Toledo Has No Garage Law

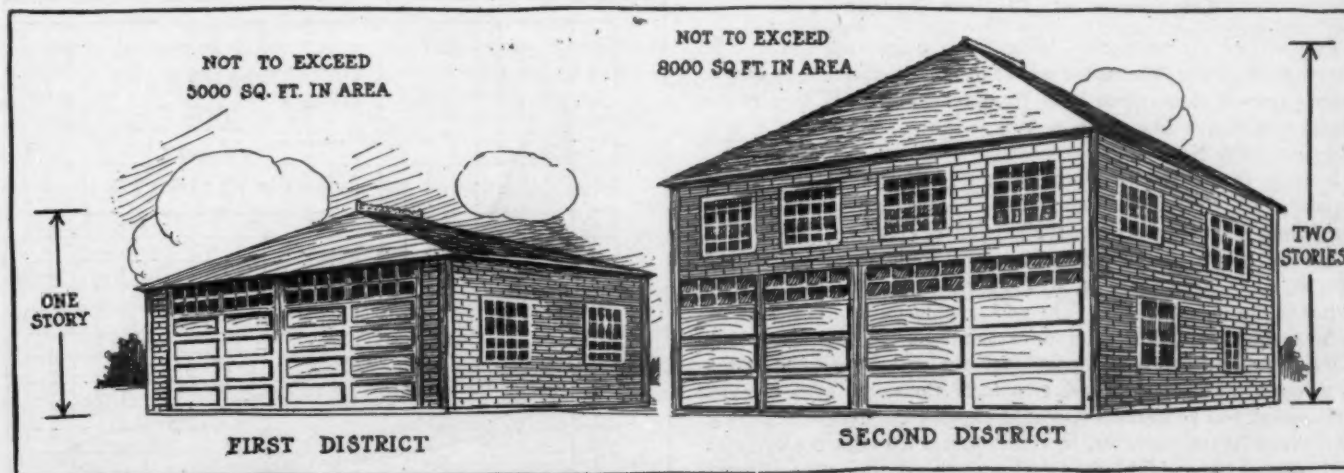
So far as the laws of Toledo are concerned, there are no ordinances regulating the construction or occupancy of garages, either public or private, and such regulation as has been possible is due to the treatment of this class of buildings as fire risk by the Toledo Branch of the Ohio Inspection Bureau. The standard requirements of this body cover the generally accepted method of underground gasoline storage, the filling of cars by means of approved portable tanks provided with pumps and hose, and, where the fuel is handled in cans, the stipulation that these cans must be of the safety type, such as have passed the examination of the Underwriters' Laboratories.

The South-Eastern Underwriters Association of Atlanta has prepared a pamphlet in which are incorporated a number of advisory municipal fire prevention ordinances which it has been recommending for adoption to cities and towns within its territory. The recommendations as to gasoline storage are practically the same as those of the leading cities, the underground system being specially favored. Other ordinances relative to the operation of garages are recommended, one of them being very similar to that which is now in force in the city of St. Louis.

From this survey of the ordinances and restrictions in effect in various parts of the country, it will be evident that much attention and consideration has been given to the facts that the increasing use of the automobile and the consequently great amount of gasoline and inflammable materials more or less carelessly stored and handled make the utmost precautions and the most rigid restrictions necessary for public protection.

The great need of most cities is for proper ordinances to compel the separation and individual isolation of the various components such as open fires of blacksmith forges, soldering pots, lighted lamps, the use of gasoline for cleaning purposes and the filling of cars, which when in combination make exceedingly dangerous hazards.

Although the many rules and regulations which the disgusted garage builder and operator must adhere to may seem entirely uncalled for and may appear to be only a large consignment of so-called "red tape," they are very necessary. Non-combustible construction for the buildings, the lack of vertical openings and the underground storage under proper restrictions for volatile oils are essentials to the public welfare which should be insisted upon in every community.



Providence is divided into two fire districts. Garages of mill construction must not be more than a story high in the first, nor more than two in the second district. The area limits are as given.



**Effect of Traveling on Retarded Spark; Increase in Efficiency at High Piston Speeds;
Viscosity Affects Carbureter; Trouble with Flow from Gasoline Tank;
Answers Comment on His Drive; Building a Car for Speed**

The Effect of Late Ignition

EDITOR THE AUTOMOBILE:—In your recent article on Economizing on the Car's Running Expenses, I was very much interested in your statements regarding the loss of power due to traveling with a retarded spark. Can this be shown on a gas engine indicator card so that the actual loss of power may be graphically brought out? If so, I would be greatly obliged if you would publish a typical indicator card for a gas engine running with normal spark advance and one in which the spark advance is greater than it should be. **INTERESTED.**

Ilion, N. Y.

The effect of the late spark upon the power diagram of a gas engine can be readily perceived. Indeed, this forms an ideal way of illustrating the case in point. In Fig. 1 is shown an average good card for a four-cycle motor. The explosion takes place when the compression is highest, that is, when the piston is at top dead center. The compression being higher, the initial pressure is naturally the maximum. Compare with this the diagram shown in Fig. 2. The full line shows what happens in the motor with the retarded spark, while the dotted area shows the probable power lost owing to the fact that the initial pressure is not as high as it should be. The dotted line does not take into account the power lost through the fact that the explosion does not take place until later in the expansion stroke, as is brought out by the fact that the curve doubles back on itself at the end of the compression stroke for a short distance. A study of these two diagrams will readily show why it is not economical to retard the spark farther than is necessary. Always remember to travel with the spark advanced as far as possible without causing a knock in the motor. It will be necessary to retard when climbing a hill, but after the summit is passed the automobilist who advances his spark again as far as is possible will be saving gasoline and therefore money.

Efficiency at Higher Speeds

EDITOR THE AUTOMOBILE:—Would you please tell me if it is true that an automobile motor works at higher efficiency at higher speeds than it does when it is running slowly? If this is the case I would also like to know why it is.

Jersey City, N. J.

MOTORIST.

It is a fact that the motor is more efficient at the higher speeds. This is readily accounted for because the carbureter has everything in its favor when the suction is greater. The suction is greater when the piston is moving rapidly in the cylinder. This is so because there is no time for a loss of the vacuum owing to the inrush of air. The compression in a motor running at high speed is also greater on account of the fact that there is less time and hence less possibility for a leak past the piston or through the valves. These two facts alone, the more perfect carburetion and compression, would explain the higher efficiency. Aside from these, however, less heat passes through the cylinder walls per stroke at high speed owing to the shorter time allowed for it to do so. Hence more heat is utilized for the purpose of driving the car and the efficiency is higher.

Viscosity Affects Carbureter

EDITOR THE AUTOMOBILE:—Would you please tell me through THE AUTOMOBILE whether the variation in the viscosity of gasoline really affects the performance of a carbureter?

Charleston, S. C.

T. E. S.

The viscosity of gasoline is markedly affected by the temperature. Taking the tests which have been made on this matter as an authority it has been shown that with gasoline having a specific gravity of .71 the flow through a nozzle of given size with a given pressure will be one-third again as much at 95 degrees as at 50 degrees. The efficiency of the carbureter, as may be readily seen, is affected because the carbureter is not so made that these changes in temperature can be readily compensated for. When the amount of gasoline which passes through the nozzle of the carbureter will vary so much for a change of 45 degrees it may be readily realized that absolutely correct carbureter adjustment at all speeds is not a readily attainable goal.

Building a Car for Speeding

EDITOR THE AUTOMOBILE:—Will you kindly answer in your Letters Answered and Discussed columns the following:

(1) I have under construction a four-cylinder car which I propose to use for speed purposes. The motor is four-cycle, has a bore of 4 5-32 inches and a stroke of 5 1-2 inches. The valves have a 2 3-16 inch opening with a lift of 7-16 inch. The timing I am considering for this motor is as follows: Intake opens at 15 degrees past top dead center and closes 35 degrees past bottom dead center. Exhaust opens 55 degrees before the bottom dead center and closes 5 degrees past top dead center. What should the length of the pistons be, and what clearance should the pistons have in the cylinders?

(2) Are oil holes in the piston an advantage or a disadvantage?

(3) The flywheel weighs 102 pounds, including the clutch.

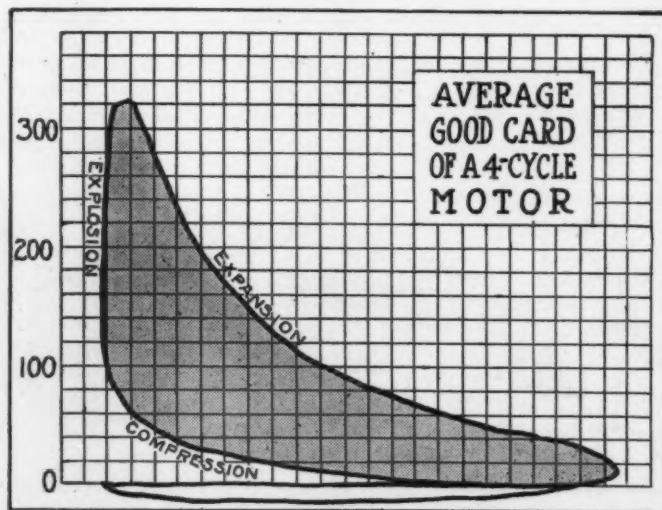


Fig. 1—A four-cycle card that does not exhibit defects

The outside diameter is 18 inches with a face of 4 3/4 inches. Could the weight of the flywheel be decreased?

(4) Are 34-inch tires as safe for speed on a mile dirt track as 32-inch? I intend to build a six-cylinder car if the four works out satisfactorily.

York, Pa.

J. PIERCE.

(1) Use a 5-inch piston with four 1-4-inch rings and a clearance of .012 inch at the bottom and .007 inch at the top of the piston.

(2) For speed purposes it would be well to use oil holes. As you do not mention what system of lubrication you intend to employ this question cannot be fully determined.

(3) It would not be advisable to cut down the weight of the flywheel below 102 pounds with the clutch.

(4) The weight of the car is a decided factor in this question, which cannot be well answered until it is known.

Answers Comment on His Drive

Editor THE AUTOMOBILE:—In answer to your comment (April 25, page 980) on my friction drive, "it is difficult to see a great gain in efficiency where there is such a high pressure between the moving parts," I would state that my object is to avoid the high pressure of the old style friction drive by increasing the velocity of the friction surfaces.

Whitman, Mass.

W. E. TRUFANT.

Trouble with Flow from Tank

Editor THE AUTOMOBILE:—Would you please tell me what can be the matter with my gasoline line? A short time ago my motor started to run erratically and would exhibit all the symptoms of not having enough gasoline. I thought that there was probably something in the line that clogged the flow of the gasoline and prevented a continuous supply, although it would allow the motor to run a short time before the shortage became noticeable. I took out the whole line and cleaned it out, thinking that I would have no more trouble with it, but when I replaced the piping I found that the same thing happened. I blamed it on the carbureter, but after trying another carbureter on the line I am at a loss to know where to look, as this carbureter acted the same as the other. In other words, I have simply traced the trouble back to the tank, and as I do not see what could be the trouble with that I have appealed to you for aid.

New Rochelle, N. Y.

P. I. POE.

You have evidently traced the trouble to the right place. The vent hole allowing the air to enter the tank as the gasoline flows out has become clogged. The result is that the flow is hindered by the vacuum and the gasoline cannot reach the carbureter fast enough. The hole should be no larger than a pin, but without it satisfactory results can never be attained from the system.

There is just one other possibility. A very elusive case is that in which a gasket has been squeezed into the piping in fastening a joint. It may have been that the gasket was squeezed into the pipe when the line was first assembled and again when you assembled it.

From Washington to Rochester

Editor THE AUTOMOBILE:—Will you please tell me through an early edition of THE AUTOMOBILE the shortest and best route from Washington, D. C., to Rochester, N. Y. How far is it?

I should also like to know the condition of the roads between Baltimore and Philadelphia and if one could make the trip from Washington to Philadelphia in one day's run. What is the distance from New York City to Rochester?

Washington, D. C.

G. E. S.

The best route would be as follows: Washington, out Maryland avenue to Blagdensburg road to Blagdensburg, Laurel, Relay, Catonsville, Baltimore. This distance of 44 miles is nearly all macadam. From Baltimore, follow macadam across Woodbrook Station, Towson, and then on to Glen Arm road. Turn to right across Railroad at Glenarm Station and go through Bel

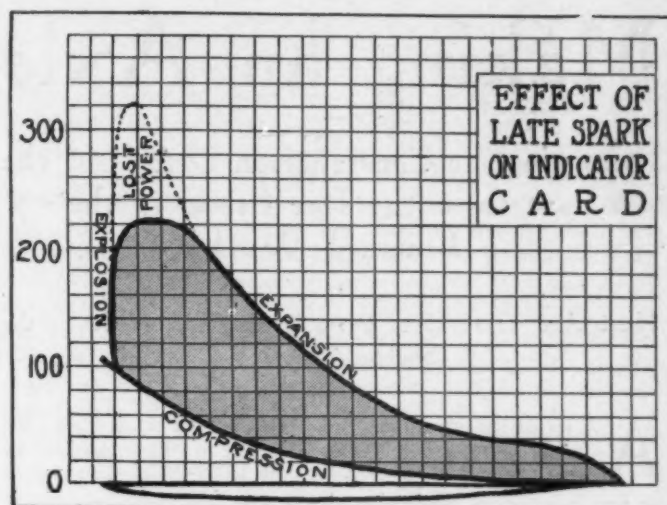


Fig. 2—Note how initial pressure falls off, owing to late spark

Air, Churchville, Havre de Grace, Perryville, Elkton, Newark, Del., Wilmington, Chelsea, Village Green, Darby and thence into Philadelphia. The roads along the latter route are reported to be nearly all of good macadam. The bad stretches fall between Havre de Grace and Newark, Del., where rough dirt roads will be encountered. The distance from Baltimore to Philadelphia is 108 miles. Philadelphia to Reading is very interesting, the distance is 57 miles and the roads nearly all macadam. The route lies through Barron Hill, Fairview, Limerick, Sanatoga, Pottstown, Douglasville, Reading. From Reading to Williamsport is 124 miles; frequent local inquiry should be resorted to. The route is through Leesport, Mohrsville, Shoemakersville, Hamburg, Port Clinton, Orweigsburg, Pottsville, St. Clair, Frackville, Ashland, Kulpmont, Shamokin, Paxinos, Sunbury, Northumberland, Milton, Muncy, Williamsport. These roads are nearly all dirt. From Williamsport to Elmira, N. Y., is 75 miles, the roads are dirt and fairly good. The route is from Williamsport to Googan Valley Station, Ralston, Grover Station, Canton, Troy, Columbia Cross Roads, Southport, Elmira. From Elmira to Rochester the roads are mostly macadam. The balance are good dirt roads. The distance is 117.5 miles through Corning, Avon, W. Henrietta, then into Mount Hope avenue, Rochester.

The distance from New York City to Rochester is about 380 miles by road.

Automobile Faster than Cycle

Editor THE AUTOMOBILE:—Would you kindly advise me as to which has the world's record for speed, the automobile or the motorcycle? Please state the records, place and by whom they were made.

Pittsburgh, Pa.

W. VERNER DERWITH, JR.

The fastest time has been made by an automobile. Bob Burman made a mile in 25.40 seconds at Daytona Beach, Fla., April 23, 1911. This is over 141 miles an hour. The fastest motorcycle record was made at Los Angeles, April 18, 1912, when Don Johns traveled a mile in 39 2/5 seconds. This represents a speed of over 91 miles an hour.

Ball Bearings on Crankshaft

Editor THE AUTOMOBILE:—Would you kindly tell me if there are any American cars using ball bearing crankshafts? I should think that this type of bearing would offer advantages.

Wilmington, Del.

L. C. KENT.

There are American cars of great merit using ball bearing crankshafts. Among the American cars using these bearings are the following: Bergdoll, Chalmers, Cino Six, Courier, Krit, Lambert, Lozier, and Only. Some of these concerns use ball bearing crankshafts on all their models, while others use them only on some of them.

Making an Axle

Following the Construction Details of the Part from the Bar Stock to the Finished Work

There Are Thirty-Five Parts in the Axles Made by the Sheldon Company

AN air of big operations, the carrying on of large work with tools of tremendous weight cannot but be impressed on the visitor to the Sheldon axle plant from the moment he first commences his survey of the long, low buildings covering a huge oblong-shaped area on the outskirts of Wilkes-Barre, Pa. The muffled roar from the shops is distinctly audible as he enters the office building across the street from the large tract in which the manufacturing operations are carried out. Twenty-two hundred men are employed in turning the bars of raw steel into finished products. Fifteen hundred sets of axles per day are turned out for horse-drawn vehicles alone. Thirty-five sets of automobile axles are daily completed, making a total of 3,070 axles produced per day on the average, while the maximum capacity of the plant is in excess of this.

Close to the Lehigh Valley Railroad, the shipping facilities are excellent. A network of sidings run directly into the yard of the plant, for the receiving of raw stock on one side, and others close to the storehouse for the finished product. The finished axles are sent to a large shipping room and loaded directly on the cars. The buildings used for the purpose of making springs, to which the concern also devotes a large share of its attention, occupy a third of the oblong area, reaching from one end to the other. Between the buildings devoted to the manufacture of springs and those used for axles there is an open space in which several smaller buildings used for testing purposes are distributed. Behind the buildings are the stockyards in which from 1,000,000 to 2,000,000 pounds of stock is kept constantly on hand. From this area, the stock, passing from department to department, comes out at the other end in a finished state. Owing to the nearness of the factory to the steel market the transportation charges on raw material are small.

Interior transportation of the product from forge to forge or machine to machine is effected by a network of narrow gauge

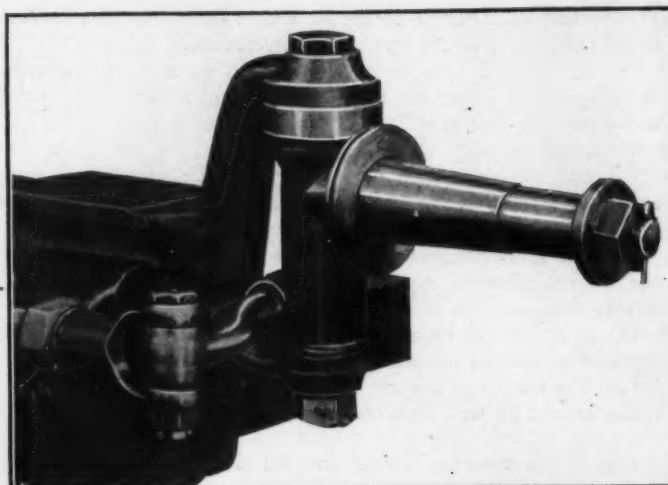


Fig. 1—Assembly of steering knuckle, showing Clevis arrangement

tracks upon which run small cars pushed by boys. By means of these cars the heaviest axle parts are handled with ease, being carried step by step through the three great divisions in the manufacture of an axle, the forging, finishing and assembling.

Walking along the railroad tracks on which the raw material is taken into the yard, the visitor first surveys the heavy bar stock which is lying about in lengths of slightly over 6 feet. The nearest building to the stock yard is the forge shop, which occupies one-quarter of the axle factory area. Entering here, the visitor gets his first insight into the manufacture of an axle. Along the wall on either side of the building are small anvils and vises upon which odd jobs in the way of repair on the handling tools for the heavy forgings may be made. Walking across the building along the tracks of a narrow gauge railway which form part of the system that traverses the plant from one end to the other with longitudinal tracks intersected by numerous transverse lines, the visitor reaches the first group of forges. These are arranged in the form of a hollow square, the furnaces on the furthest side from the wall. On one adjoining side stand two tremendous forges for the axle bar and on the outer side is the trimming machine for removing excess material. The axle bar thus works its way around three sides of this square. The axle drop arm works its way around the other way, passing from the furnace to the side opposite the heavy forges where the small forge for the purpose of forming the arm is located. It then passes to the trimming machine. After passing around this square, the axle bars and other parts are passed to the subsequent operations.

The furnaces forming the inner side of the series of squares just described pass in a long line down through the center of the hammer shop. Before them runs one of the longitudinal lines of tracking so that the raw material is rapidly brought to the furnaces from the stock yard. Outside of the regular furnaces there are twenty-two heat treating furnaces, all of which are equipped with electric pyrometers so that the temperature of the different axle heats are reported. These are distributed in small groups about the building. It takes about 3 hours to heat-treat some of the axles.

The Factory Employs 2,200 Men

The Sheldon factory employs 2,200 men. Of these, 100 are utilized for miscellaneous work, not being attached to any special department, 124 work on special tools, 243 are in the hammer or axle forging shop, 422 in the finishing department, 129 in the assembling rooms, 37 shipping and stock clerks and 83 in the office, sales and engineering forces. The other 1,062 are in the spring department. The axle men take the axle through its series of operations, passing it along from one end of the long oblong through the big forges, then the blacksmith shop and finishing department until it finally reaches the assembly room, whence it passes to the shipping department.

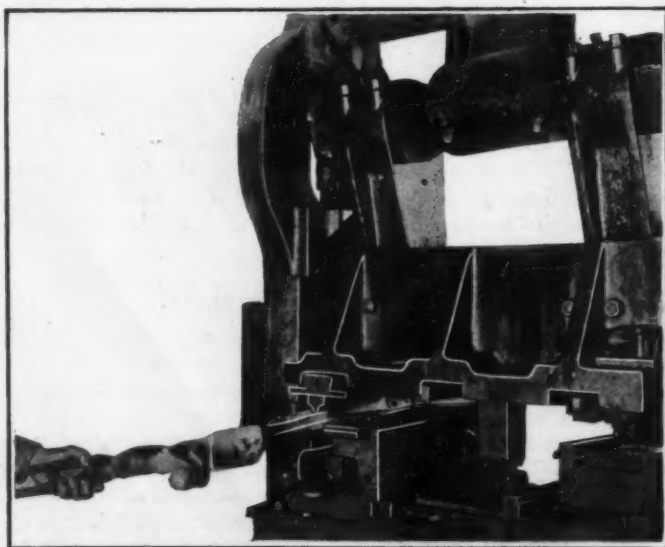


Fig. 2—Showing the trimming of flash from a front axle bar



Fig. 3—The big forge used for shaping the front axle bars

The bar of carbon steel stock for an automobile front axle is ordered the required length. It is square in section. After being heated at the ends, it is placed in a bull dozer, and the ends split open for a distance of about 10 inches. The bull dozer is a horizontal press, driven by belting and gears from the power shaft of the plant. The die moves in a horizontal direction being slow but extremely powerful, the power being stored in a large flywheel. The die splits the end of the bar stock and within a half minute forms it roughly into the shape of a knuckle, thus making the subsequent forging operation much more simple and saving time as compared to the common practice of bending the heavy stock at the ends.

After the front axle bars have been split in the bull dozer they go back into the furnace, and are heated at one end. The heating extends from the end of the bar to the center. This heating is watched carefully by men who have gained long experience in judging the correct color. When the correct heat is reached the axle is ready for its first forging operation. A long, hooked bar which hangs down from the overhead track

upon which it runs, is swung beneath the hot bar. This is then carried over to the heavy steam drop forge and laid upon the die. Three men are required to carry the bar from the furnace to the forge, arrange it in its correct position in the die and steady it while the hammer falls. When the piece is in the correct position, the operator presses on the bar pedal and releases the drop hammer carrying the die. The impact of the die on the red-hot metal shakes the ground and sends a shower of brilliant sparks in all directions. The men working on the forge are compelled to shield their faces with their arms, while the chief hammer man places his reliance on a hat brim that rivals a Western cowboy's in its width. From twelve to fifteen blows are delivered to the material by this die. These blows follow at intervals of about 15 seconds. The bar is then quickly seized and swung to the next die by the hooked rod. This is the finishing die.

Finishing Forging of Axle Bar

The second hammer is released and drops in the same manner as the first with an impact just as heavy. A considerable amount of flash or excess material is spread about the bar after each blow from this drop forge. This is immediately sheared off after each blow or two in the die. The machine which shears off the flash is formed to the finished shape of the axle. It cuts off the web or flash which has been spread out by the second die. It takes on an average nine blows of the second die to finish the end of the axle. The total time consumed in the second die, including the flash trimming operation, is about a minute and a half. This finishes one end of the axle as far as the forging operations are concerned. The other end is then heated in the furnace and the process is repeated.

After both ends have been forged, there is a small part in the center of the axle, where the bar has not been exactly formed into the finished I-beam section. This has to be drawn out and it is done by a small drop forge with a die formed to make the center of the bar conform exactly to the ends. The axle is placed in a smaller furnace and heated at the center. It is then placed in the die and the hammer released. Three blows are generally sufficient to draw the center to the required shape. The forging of the bar is then complete.

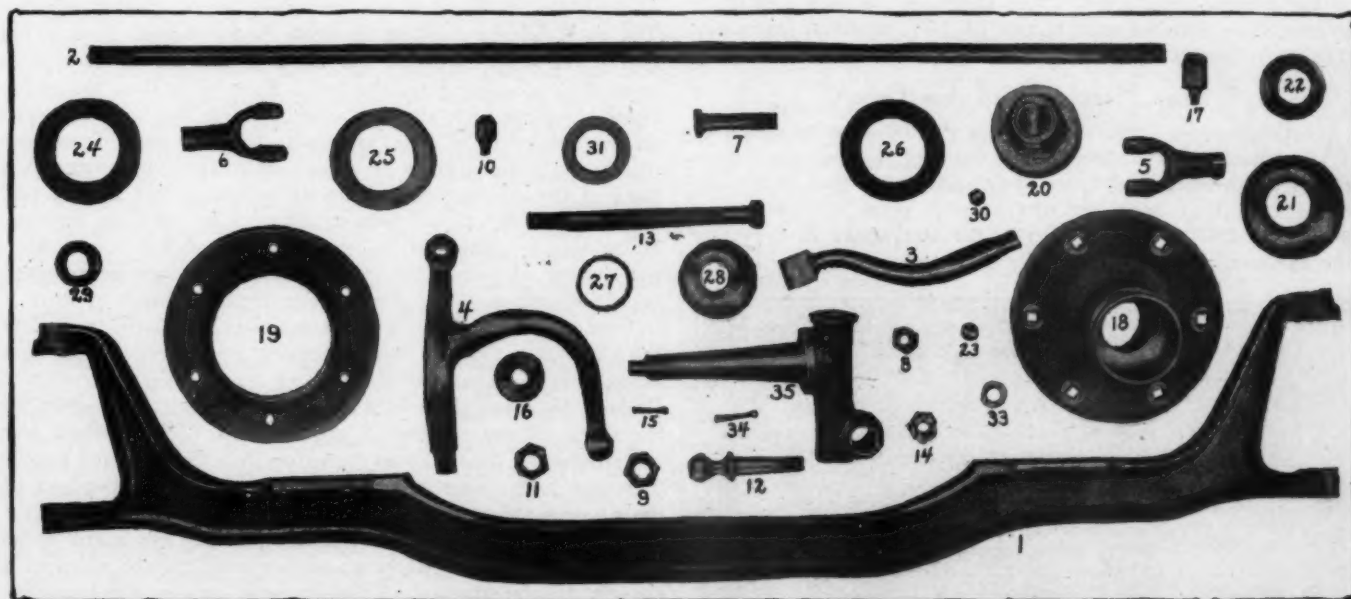


Fig. 4—Showing the parts that go to make up a front axle as made by the Sheldon Axle Company

- | | | | |
|---------------------------------|--------------------------|-------------------------|--------------------------|
| 1—Beam forging | 10—Clevis pin grease cup | 19—Hub flange | 28—Outer bearing cup |
| 2—Cross-rod | 11—Lever nut | 20—Hub cap | 29—Outer bearing cone |
| 3—Single steering lever | 12—Clevis ball pin | 21—Inner bearing cup | 30—Outer bearing balls |
| 4—Double steering lever | 13—Pivot bolt | 22—Inner bearing cone | 31—Outer ball retainer |
| 5—Cross-rod clevis (adjustable) | 14—Pivot bolt nut | 23—Inner bearing ball | 32—Right axle nut |
| 6—Cross-rod clevis (fixed) | 15—Pivot bolt nut cotter | 24—Inner ball retainer | 33—Axle nut screw |
| 7—Cross-rod clevis pin | 16—Thrust washer | 25—Felt washer retainer | 34—Clevis pin nut cotter |
| 8—Clevis pin nut | 17—Pivot bolt grease cup | 26—Felt washer | 35—Steering knuckle |
| 9—Clevis pin jam nut | 18—Hub | 27—Inner bearing filler | |



Fig. 5—Making a hub cap; calibrating unfinished part

Before leaving the drop forging department, some of the smaller operations should be observed. There are several small parts to the front axle and steering gear, for instance, that are drop forgings. These are made in smaller machines managed by young men who will probably take up the operation of the heavier hammers after gaining a lengthy experience with these smaller tools. The steering lever is one of the drop forgings which affords interest on account of its peculiar shape. From one piece of bar stock two of the steering levers are made, one from each end. They are made quicker in this manner, material is saved and they are easier to handle. The bar is then cut through the center and the steering levers are ready to be annealed. This is done before the machining, on all the axles made by the Sheldon concern. As it is believed that it is not sufficient to allow the forgings to cool on the ground after being taken from the hammer, each forging is reheated and annealed.

The steering knuckles are made in the same manner as the steering lever, while the cross-rods, clevises and universal locks are all case-hardened at the wearing points by the bone dust process.

Besides the drop forges there are forty-eight Helde hammers in the forging department. These hammers are used principally in connection with the manufacture of the commercial rear axles. The die is carried on the end of a long, horizontal wooden beam.

Some Hammer Men Are Expert

At the opposite end of the beam is the hammer-operating mechanism. It consists of a flywheel to keep the motion steady and a wheel with three cams so arranged that as the follower falls from each cam the hammer gives a blow. There are three blows to a revolution of the cam wheel. In operating the hammer, the workman allows the weight of the bar to rest

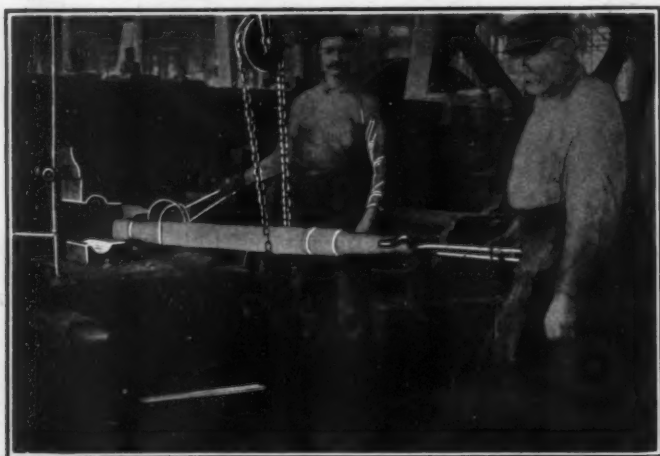


Fig. 6—Helde hammer used on commercial rear axles

upon a chain fall as shown in the illustration. He is then free to control the movements of the bar with a long pair of tongs. For shaping the spindle ends of the rear axles the dies in the hammer are of the shape shown, while for the straight part of the bar axle the hammer is flat. It is the flat part of the axle that calls into play the skill of the hammer man. Experienced men can judge the thickness of the part so closely that a gauge is not used until the axle has been completely hammered, 1-64 inch tolerance being allowed. It is claimed that the axles which are hammered to size from the bar stock are 25 per cent. stronger as regards tensile strength than those which are cold rolled to size. Some of the rear axles for high-grade trucks, are made from nickel steel, heat treated.

The rear axles have another operation to be performed upon them before leaving the forging department. They are placed in a press and a collar is thrown up on the bar inside the spindle. The radius rods of the rear system fit against this collar. After the collar has been thrown on, the forging is passed along to the blacksmith shop.

Front axles which have passed through all the forging operations are placed on the small cars and pushed back into the blacksmith shop where the drop is given them if they are of drop construction. This is done by placing the front axle first in a furnace. A half hour's heating will bring it to the correct temperature.

Steering Levers Bent by Hand

The axle is then placed in the bull dozer in which a die having the form of the drop is fitted. One stroke of the die will be sufficient to bend the axle to its correct shape and give it the required drop. If the axle has a double drop it does not take any longer to press it than with the single drop, the only difference being that the die is of different shape. The whole operation in the bull dozer does not take longer than a minute after the die is once set up.

Another operation which takes place in a corner of the blacksmith shop is the hand bending of the steering levers. These come from the forge in a flat shape and it is necessary to bend the arm carrying the steering socket ball to an angle of approximately 90 degrees with the plane of the rest of the part. This is done very quickly and readily by hand in a very short length of time, the whole operation not taking more than 20 minutes. The ball and the arm which holds it are heated to a bright cherry red color, the arm not being heated for a distance of more than 3 inches from the ball. The ball is then placed between the jaws of a vise and after the vise has been tightened on the ball, a pair of tongs is used to bend the lever down until the correct angle is given by a quick downward movement. The jaws of the vise are not square as ordinarily, but have a pair of auxiliary jaws slipped between them. The auxiliary jaws are hollowed out so that the ball is held firmly in the hollow without danger of being distorted. These jaws may be removed readily when it is required to use the vise in its ordinary form.

Twenty or more anvils of different sizes are distributed about the blacksmith shop so that all forging irregularities which are detected in the final calibration after forging can be corrected. Besides the anvils there is a large emery wheel along which all the axles are run to take off the small rib of flash which will be found along the center of the axle where the male and female dies meet. The metal is squeezed between the two members of the die and although it is passed through a trimming die after the forging of the ends is complete, this small rib is still to be found. This is removed here and the axle brought down to a smooth, regular surface. Three minutes on the wheel is sufficient for this operation which is only necessary insofar as appearance is concerned and is of no structural value.

After leaving the blacksmith shop, the forged pieces are passed along to the finishing department. The front axles have to be milled before any other work is done upon them. They are generally milled in a multi-milling machine which is capable of milling both ends at once. A very ingenious machine is used in

milling the spring pads which are an integral part of the front axle. This machine is shown in Fig. 7. The pads are shown here as being milled at the same time. In this way instead of taking 40 minutes in the milling and double as long in the setting up of the job, the operation requires 20 minutes for the milling and 4 minutes to set it up. The operation as timed was on a carbon steel front axle for a passenger car. The milling machine employed is of a new pattern and saves from 25 to 30 minutes over those of the older type.

The rams in which the steering knuckle spindles are first roughed to shape after leaving the forge shop are very interesting pieces of machinery. These rams are excellently adapted for doing the work on the large special nickel steel rear axles for commercial purposes. They are of turret type. The cutters are so arranged that the whole spindle is being brought down to its approximate shape at the same time. The cutters are close together and each is independently adjustable so that the ram can be adapted to changes in the shape of a spindle. It takes 35 minutes to ram one of the spindles of such an axle, but the time required is less than this on one of the ordinary carbon-steel axles, 30 minutes being usual. The operator of the ram places the part in the machine through the left side in the same manner as the ordinary turret lathe is fed. A chuck adapted to the spindle is closed on it with a jaw clutch and the cutters, after having been set up in the turret in the customary manner, are turned against the work and the machine started. After the operation is completed in the ram, the spindle has been centered and is ready to be finished in a lathe.

Assembly Rooms Are Separated

Multiple spindle drills of all sizes are operated in the finishing department. The holes through the axle jaws, for instance, are both bored at once. These holes take the pivot bolt which passes through the steering knuckle and hence must be absolutely true. For this reason it is an advantage to have the same drill pass through the upper and lower jaws of the axle at the same time. The faces of the jaws are then milled to a finish and sent on to the assembling department. The milling and finishing operations of the other members in the rear systems or front axles are carried on in the same manner, all bearing surfaces being milled smooth after the required holes are drilled through the necessary points.

An operation which is worthy of note before passing on to the assembling room is the manufacture of the large hubs. These are received as steel castings and are made outside as are all the other steel castings which are employed in different parts of the rear system such as the radius rods, bearing races, etc. The hub is then centered in the machine which is illustrated herewith and shown better than can be described. The operator is in the act of using his gauge on the nearly completed hub, while the turret containing the cutter is turned back out of the way. It is a little more than a half hour's job to make the hubs in this way and the finished appearance of the hub is ample justification of this method. The hubs are drilled for the bolts which attach them to the wheels and are then ready for assembling.

The assembling operations are carried on close together, although the space occupied by the rear system assembly is partitioned off from the front axle assembly room so that there is no danger of confusion. In assembling the front axle the bar is put in the vise in the manner shown in the illustration, Fig. 1. The parts which make up the complete axle and steering assembly are laid on the bench behind the vise. The steering knuckle, with the upper thrust bearing fitted in place, is then put into the jaws of the axle and the pivot bolt slipped through the center and fastened. The clevis with the universal block is then fitted to the steering knuckle, along with the steering lever. The cross-rod is next put into position and then the hubs are assembled, the cup and cone bearings put into place. All the parts are shown in Fig. 4. Empire ball bearings are employed. The balls are bought outside, while the races are made by the Sheldon Axle Company.

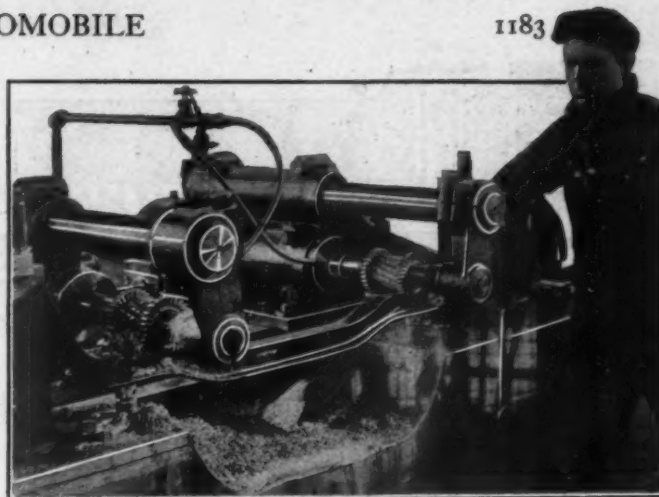


Fig. 7—Milling machine at work on spring pads

The rear system assembly is occupying temporary quarters just at present pending the completion of the new building which the company is now erecting. The new shop will be for the special purpose of taking care of the commercial truck work. It is the aim of the Sheldon concern to produce ten complete chassis per day, that is, including the frames, axles, steering gear, springs, and brakes. In order to demonstrate these chassis to prospective purchasers, motors, wheels, chains and all the other necessary equipment will be installed in a few chassis to act as demonstration machines. A fine testing ground is available as the Sheldon plant is very close to Giant's Despair hill which is famous throughout the country as the scene of many an interesting hill-climbing contest. Until these added facilities are completed the rear system assembling is carried on in the room just mentioned. The differentials are made by the Brown-Lipe company and are received in a semi-assembled state. They are installed in the malleable cast housings. All these castings are made outside.

The jackshafts are composed of 3 1-2 per cent. nickel steel, heat-treated. For the 1-ton truck they are 1 1-2 inch in diameter and taper to 1 3-8 inch. The housing are of seamless cold-drawn steel tubing, the outside diameter of the tube being 2 1-2 inches while the material used is 3-16 inch in thickness.

The Company Also Makes Springs

The axles are fastened to the sprockets with a taper key besides the usual nut and cotter pin in a cap nut. The Brown-Lipe gearset is inclosed in an aluminum housing and so arranged that a ratio of 3 1-2 to 1 is given. The weight of the jackshaft is about 225 pounds. In the 1-ton truck both the brakes are on the rear axle, one set contracting and the other expanding, while

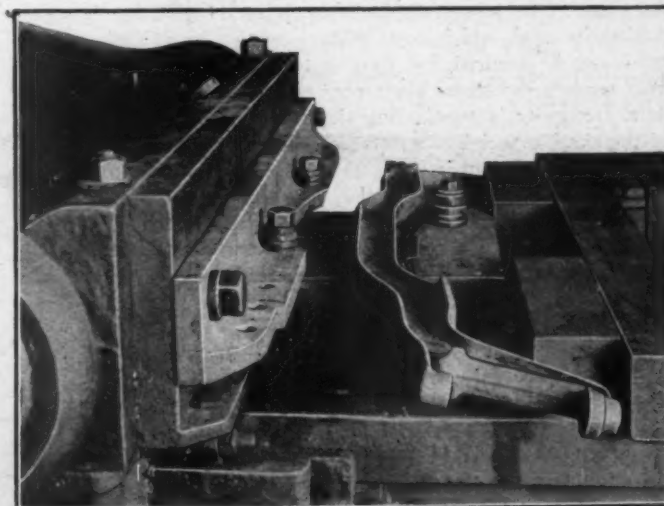


Fig. 8—Bulldozer that puts the drop in the axle

Tires

Their Use and Abuse

THE proper fitting of the inner tube within the envelope is a matter which should be given a great deal of attention. If the tube becomes creased, if it bunches at certain points and is stretched at others, if it gets twisted or if it is not free from air when the fitting process is begun, then the most sensible thing to do is to remove it from the shoe and to start the fitting process over again. It may take longer at the start to be careful in this way, but it will save time later on when on the road, to say nothing of the annoyance of blowouts which it will prevent and consequently the amount of money it will save.

In putting a tube in a shoe, the first thing to do is to get the tube perfectly flat. This necessitates the complete removal of any air which may be in it. Remove the valve cap; then unscrew the valve and its spring and take them out. Next turn the valve stem down and roll the tube up, starting at the point diametrically opposite to this stem. This will force the air from all parts of the tube toward the valve and finally all of it will be forced out when the tube is completely rolled to the stem. Hold the tube in this position and replace the valve and the valve cap. The tube will then remain quite flat, since no air can re-enter.

Now it is ready to be placed in the envelope, but this should not be done until the latter has been carefully examined to make sure that there are no cut places and that the inner surface is perfectly smooth. If there is any dirt in the shoe, it should be entirely removed. Having made sure that there are no inner projections, the next thing to do is to dust the inside of the casing carefully with powdered soapstone or talc. This serves to smooth the surface against which the tube bears and it acts as a lubricant for the rubber. Tires heat up after long runs, due largely to the friction between the shoe and the tube. The soapstone serves to reduce this friction, just as oil aids in the lowering of friction between any two metal bearing surfaces. Too

in the larger size trucks one brake is on the jackshaft and the other on the rear axle. The brake drums are of pressed steel 14 inches in diameter. The pressed steel work for the brake drums and chassis frames is done outside.

Besides the axle works the company has a large and successful spring factory which is doing remarkably well. It is the policy of the concern just at present to expand and modernize the plant. The power employed to drive the shafting is steam. Anthracite coal, which costs \$6.50 a ton in New York or Chicago, can be secured for \$3.50 a ton by the Sheldon concern. This renders the steam plant very economical. Still, at the same time, electricity is supplanting the steam power in certain parts of the shop, especially on some of the tools in the finishing department. The plant is about 30 years old, the Sheldon company being about 8 years old when they moved to the present site from Auburn, N. Y. An interesting feature is the fact that while the plant was in Auburn some convict labor was employed. Many of these convicts, having learned the trade, secured work with the company after their terms were served and became good citizens.

A testing laboratory is also being constructed so that the testing may be carried out more efficiently in one spot instead of being scattered over a wide area as it is at present. The present system of testing involves the transportation of the material over considerable space and this is to be eliminated. A cost department is just being introduced and it is believed that the cost of production will be reduced in some quarters by an increase in plant efficiency.

much of this powdered material should not be used, however, as it is apt to form hard lumps which will scratch or chafe both tube and casing, injuring them just as pieces of gravel or dirt would.

To replace the tube in the shoe, pull the latter open at the bead with one hand about a foot to the right or left of the opening molded for the valve stem, take the tube in the other hand and push it well into the casing, being careful to get the valve stem properly located in the bead openings. Continue the slipping of the tube into the envelope in sections of about a foot until it is wholly within the casing, remembering that it must not be stretched or twisted in the process. Pull the tube gently toward that portion that has just been inserted so as to relieve any tension which may have been caused in slipping it into the shoe. Small creases may form in doing this but they will disappear when the air is put into the tube.

Slight Inflation to Remove Wrinkles

If there has been no stretching of the tube, there will be no seemingly extra length when the last section is to be put in, and there will be no bunching in order to get it all inside. After all the tube is in place, run the hand around inside the envelope between it and the tube to smooth out any needless wrinkles or bunches and to relieve any slight tension to which any part may be subjected. See that the tube is not twisted so that no longitudinal creases will be formed and no cracks later developed when the tube is inflated.

When the tube has been satisfactorily and carefully fitted to the shoe, it should be partly inflated. Too much air should not be put in, as that would make it difficult to finish the job. Only enough to eliminate all the wrinkles should be added. Now run the hand around the tube again to smooth out any remaining creases or bunches. All irregularities, wrinkles and creases should be absolutely eliminated before the shoe is placed on the rim. Do not get the mistaken idea that a crease will smooth itself out when the tire is in place on the wheel and the tire inflated to its normal pressure. This may or may not happen—it usually does not. On the contrary, small creases almost invariably become more deeply set as the pressure is added, and after the tire has been run for a few miles, they change from creases into cracks, resulting in blowouts. And the rush of air through a hole thus made in the tube usually tears the sides of the hole, making it much larger than the original crack. When the tube is removed, the automobilist frequently sees a crack several inches long, and he blames the tire for being made of faulty materials, when a very small and innocent-looking crease was originally responsible for the whole thing. If this small crease had been carefully eliminated when the tube was being fitted, the crack would never have been formed, and the value of the tube would not have been reduced. Vulcanizing will renew the usefulness of the injured tube, but naturally no tube is as good after being repaired as it was originally.

Test Pressure with Tire Gauge

Most automobilists know that there is a certain pressure at which their tires should be maintained. There are a good many, however, who appreciate this fact and yet will depend on guesswork to a great extent when they could have accurate information regarding the pressure in their tires at a very small expense. The convenient forms of tire-pressure gauges which are now on the market do not cost very much and yet they do a world of good to the automobilist who wishes to keep his tire bills at the lowest possible point. There are many forms of these gauges, all of them being very accurate. The method of using them is very simple. The cap to the tire valve is removed and the gauge is placed firmly over the tire valve. The air is then allowed to flow from the tire and the pressure will be registered on the gauge. The proper pressure for each set of tires varies according to the load to be carried and the size of the tire.



The Ideal Automobile for 1913

*Some of Our Readers' Conceptions
of What Next Year's Car Should Be*



Six Brakes for Safety

EDITOR THE AUTOMOBILE:—Having become interested in the topic of "My Ideal Car" in your magazine, I beg to give you my conception of the same.

The motor would be a six-cylinder T-head type with a 5-inch bore and a 7-inch stroke. It would be lubricated by the force feed method through a hollow crankshaft. I would specify a Bosch double synchronized system of ignition and a Rayfield carbureter.

A herring-bone gear pump and fan in connection with a pointed radiator would make up the cooling system. A multiple-disk clutch running in oil would make riding a great comfort.

I would have a four-speed transmission with direct drive on third and high speed on fourth. As speed would be a large factor in this car, it would be chain-driven, the chains being in cases running in oil.

I would have wire wheels, the new Booth demountable type preferred.

The braking-system can never receive too much attention, as it is always liable to go back on one in tight places. I would have six brakes, two operating on the rear wheels, two on the jackshaft and two on the front wheels. The jackshaft brakes would be water-cooled.

I would have a compressed air self-starter, which would also be used for a tire pump, and a Gray & Davis system of electric lighting.

The springs would be extra long, supporting the underslung frame.

This car would cost, if compared with the popular makes now on the market which are equipped in a very similar manner to my ideal, between \$6,000 and \$9,000, although I think it could be made for about \$4,000 with a fair margin of profit to manufacturer and dealer.

Brooklyn, N. Y.

C. E. HISCOX.

Speed and Comfort Combined

EDITOR THE AUTOMOBILE:—Did you ever ride in a car which was doing its level best to surmount a rather steep hill without going into first, and have some very powerful and trim-looking machine pass you and make the hill as if it were level with no seeming exertion at all? I have; and for that reason my ideal car must have power—power for any emergency. It should be

To Take Nobody's Dust

EDITOR THE AUTOMOBILE:—The 1913 car, to come up to my standard, will be a strictly high-powered car. The motor will have six cylinders, cooled by a thermo-syphon system. The valves will be in the heads of the cylinders and they will be rather pretentious ones. The motor will have a bore of 5 inches and stroke of 6 inches, giving it a horsepower of about 70.

The frame will be a channel section of vanadium steel about 33 inches wide. The front axle will be an I-beam and the rear one a full-floating Timken.

The car will have elliptic rear springs, 50 inches long by 2½ inches wide, and three-quarter elliptic front springs 45 inches long. The wheelbase will be 130 inches and the thread 56 inches. The drive will be by shaft with four speeds forward and a reverse. There will be three pedals and one hand lever for the control of the machine. The clutch and emergency brake will be operated by one pedal, thus eliminating the extra lever. The spark and throttle will be on a segment on top of a 20-inch steering wheel. The third pedal will be an accelerator.

The ignition will be by a dual system, and the carbureter specially constructed for speed.

The car will be equipped with two- and four-passenger bodies only. The equipment will consist of a top, windshield, speedometer, acetylene self-starter, electric lights, and demountable rims on 42-inch wheels.

The car I have outlined will not sell for a song, neither will it take dust from anything on the road. It will be built heavy, and strong enough so that its great power will not tear it to pieces.

Gloversville, N. Y.

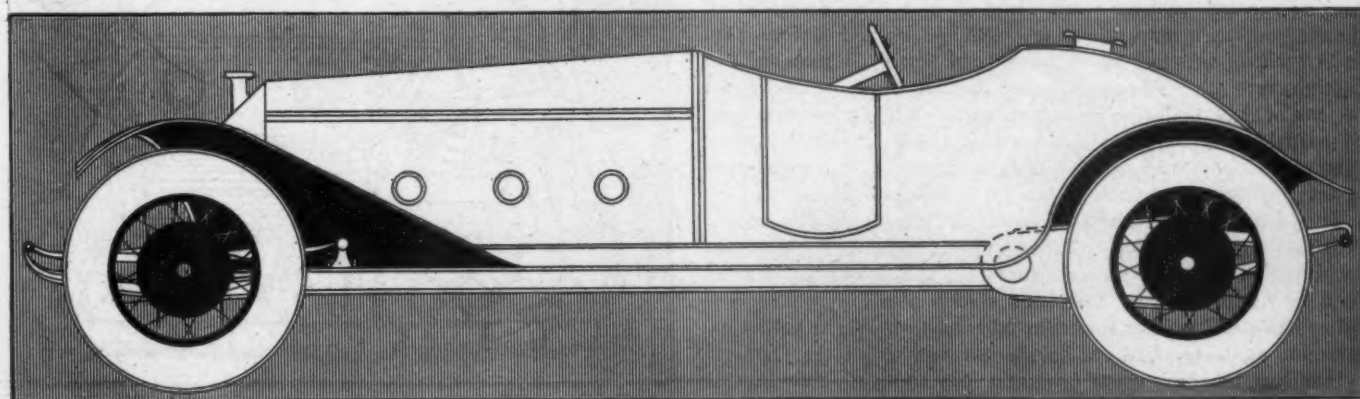
W. CURTIS MILLS.

a six-cylinder machine with at least 60 horsepower; cylinders 5 by 7 inches would give this power very easily. The motor should be of the T-head type, having inclosed valve stems and large valves, 2 1-2 inches in diameter.

The frame and all chassis parts should be very sturdy to stand up under the high power of the motor. The frame should be of pressed steel channel construction, reinforced by wooden members. There should be cross braces, the two amidships supporting the four-speed gearbox. The propeller shaft should be inclosed in a substantial torque tube, which would have to be large enough in diameter to inclose the two universal joints.

South Bend, Ind.

SPEED CRANK.



Six brakes, wire wheels and pointed radiator are prominent features in this ideal of C. E. Hiscox

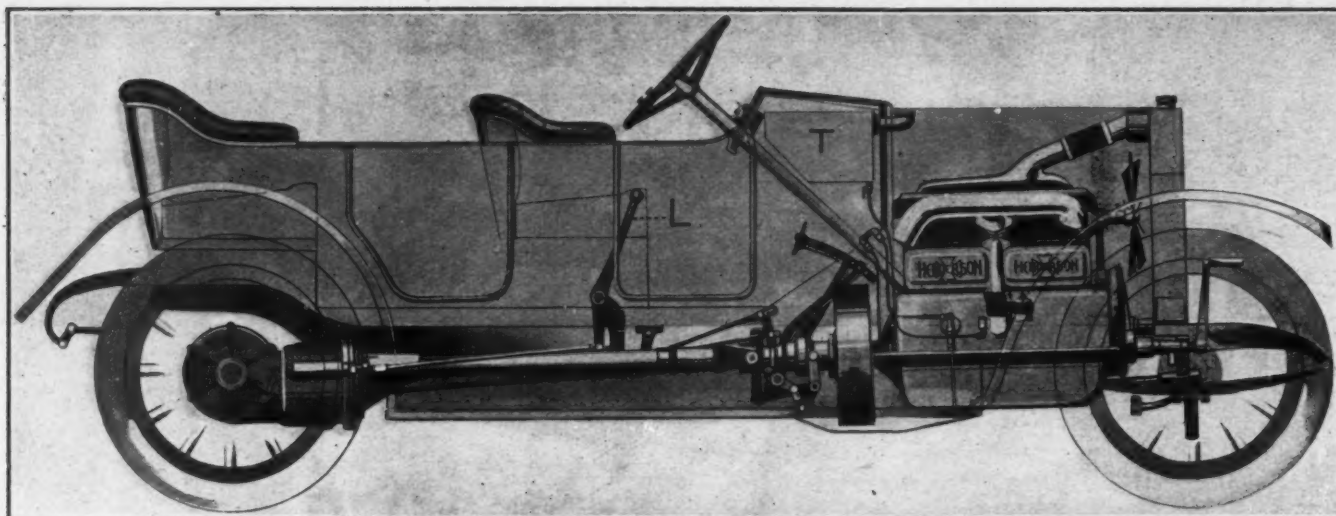


Fig. 1—X-ray view of the new Henderson touring car, showing location of tank and filler pipe

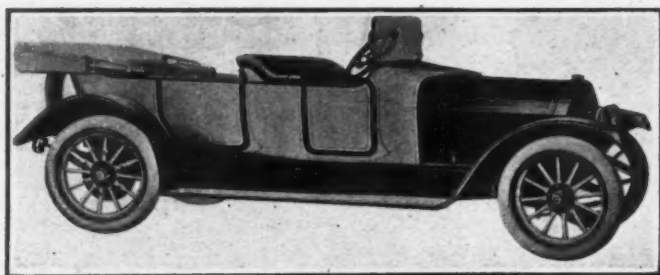


Fig. 2—Showing up-to-date lines of Henderson touring car

Henderson Here

New Car Makes Its Initial Appearance in Touring Car and Roadster Models

Novel Method of Control and Handy Location of Fuel Tank Are Features

THE complete details of the new Henderson car, which was announced in THE AUTOMOBILE some time ago, are at hand, and these show the new model, which is built in touring car and roadster form, to be an up-to-date design in all details, and to incorporate a few features not heretofore used in American cars but which have been found in some of the foreign machines. The new touring car will be known as model 46, and will be built for five passengers, while the torpedo type of roadster will be officially known as model 44. The leading features of both are alike, the same motor and transmission system being employed.

The Henderson is a 27.2-horsepower car employing a monobloc Northway type of four-cylinder motor, and using the Stutz transmission system, which embraces a selective gearset formed as a unit with the rear axle, this system also having the propeller shaft enclosed in a torsion tube supported by a yoke construction at its forward end to a cross member of the frame.

Some of the high spots of motor car trend as seen in this new model include left-side steering with center-control levers, gasoline tank incorporated with a cowl dash, dash lamps hidden

within the dash, Ward-Leonard's electric generator for lighting purposes, thermo-syphon water circulation in the motor, etc. The gasoline tank of 16 gallons capacity is entirely concealed within the dash. There is a drop of 16 inches between the bottom of the tank and the float level of the Schebler carburetor, and the carburetor is located slightly higher than usual, giving a relatively short intake manifold. The tank's location is well illustrated at T, Fig. 1, in which the filler pipe hidden beneath the bonnet at the forward side of the tank is also shown.

Left-Side Steering and Center Control

The Henderson left-side steering and central control is novel in that the gearshift lever is almost entirely enclosed between the two parts of the front seat as shown at L, Fig. 1. All that can be seen of the lever is the hard rubber ball constituting the upper end, which is carried on the end of the lever projecting through a slot between the front seat cushions. The equivalent of the conventional H quadrant is used for obtaining the different speeds, but in this the action of crossing through the gate of the quadrant, meaning the horizontal part of the H, is accomplished by a vertical movement of the lever. In starting the car, the ball handle is pulled up about an inch, and moved backward approximately 2 inches, meshing the low-speed gears. To obtain the intermediate speed, the lever is pushed forward, drops down through the gate of the quadrant, and by a further movement

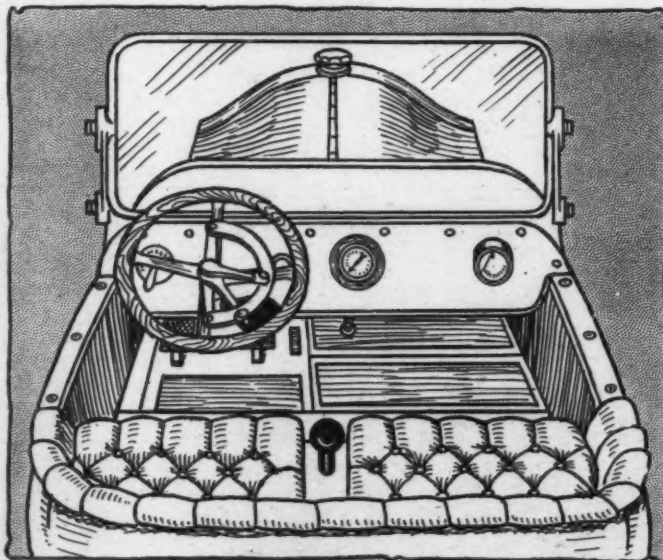


Fig. 3—Showing location of gear-shift lever and hardness of dash equipment

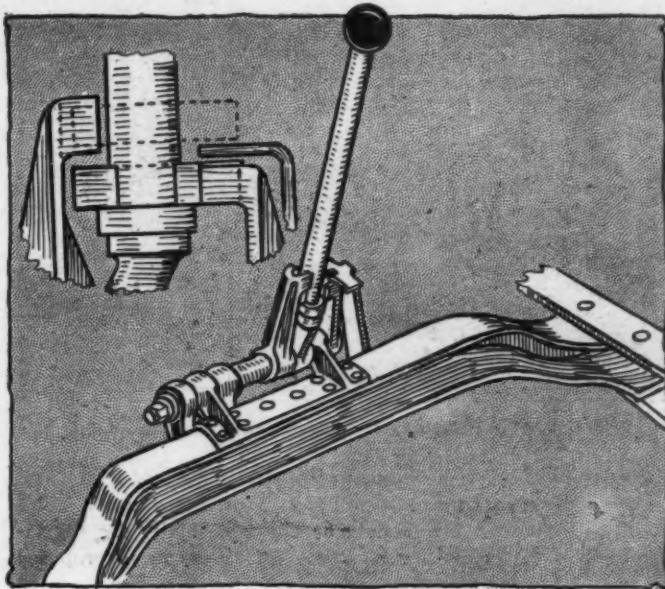


Fig. 4—Novel mounting of gear-shift lever. Note vertical movement through gate

forward, causes the engagement of the intermediate gears. Simply pulling the lever back then gives the high speed. The quadrant is so arranged that in going from low to second speed there is no danger of accidentally continuing forward along the upper side of the H and engaging the reverse gears unintentionally.

Placing the steering column on the left side has been possible by using an L-type cylinder casting with both sets of valves at the right side. The Gemmer steering gear uses a worm with complete gear, and the steering column is exposed for but a short distance below the wheel, at which point it enters the rear board of the cowl dash. An 18-inch wheel is fitted.

The pedal control is standard; the left pedal controls the leather-faced cone clutch through the medium of a ball-thrust column. The first portion of the pedal movement controls the clutch, and a further movement applies the service brake. The right pedal controls the emergency brakes. Because of this arrangement of pedals the ordinary emergency brake lever is eliminated, and the lever system of the car confined, so far as can be seen, to the ball end of the change-speed lever which rises between the front seat cushions. The entire scheme is a simple one in that there is nothing whatever to interfere with the entrance or exit of the front-seat passengers.

Details of Lubrication System

The Northway motor employed has a bore of $4\frac{1}{8}$ inches and a stroke of $5\frac{1}{4}$ inches, this giving a bore-stroke ratio of 1.27 to 1. The block casting constituting the four cylinders incorporates the intake manifold, with the exception of the short riser from the carburetor to the portion of the casting constituting the manifold. The entire top of the cylinder block which forms the top of the water jacket, is a separate casting, a part of the return water pipe being formed integrally with it. The crankcase portion of the motor is a two-part aluminum casting, with the three crankshaft bearings supported in the upper half. Rigidity in this casting has been aimed at by the use of heavy webbing.

The lubrication of the motor is the standard circulating system. In each of the oil depressions into which the connecting rods dip overflow holes are provided, permitting excess oil to return to the lower reservoir. Circulation is maintained by a plunger pump driven by eccentric from the camshaft, this pump delivering the oil through a sight feed on the toe board to the three crankshaft bearings. As in all motors using a circulating oiling system, the lower part of the crankcase is in itself divided horizontally into two parts, the lower constituting the oil reser-

voir containing the oil pump, and the upper portion taking the form of a depression beneath each connecting rod, each depression forming an oil well into which the connecting rod dips.

The entire motor is mounted on a three-point suspension.

The detailed points of design in the motor embrace the use of valves with bevel seating, the heads being $2\frac{1}{8}$ inches in diameter. The valve lift is $\frac{3}{4}$ inch. The valve tappets are of the mushroom type at the lower end and are provided at their upper end with hardened screws and set nuts for adjustment purposes. Each tappet operates in a cast-iron guide.

Transmission Is Three-Point Unit

The crankshaft and connecting rods are alloy steel forgings with a tensile strength of 120,000 pounds per square inch. The crankshaft bearings are 2 inches in diameter. The forged camshaft has a 2-inch bearing at its forward end, which is also 2 inches in diameter, this extra size being used to absorb side pressure due to the driving gear. Helical timing gears are used.

The electrical system of the motor embraces a Remy magneto for ignition, and a Ward-Leonard generator for the electric lights. The two instruments are mounted in line with each other on the left side of the motor. The generator is mounted on a pad on the crankcase, and is driven from the crankshaft through helical gears. It rotates at crankshaft speed, and is designed to carry the entire lighting load with the car traveling at 10 miles an hour, or faster, whereas at lower speeds, a battery located under the front seat supplies the lighting current, and also ignition current for starting. The Remy magneto is driven from the generator shaft.

The clutch carried within the flywheel is a leather-faced cone, with a $12\frac{1}{2}$ degree angle. It has a diameter of 15.75 inches and a face width of 2.75 inches. The clutch spring tension may be adjusted by removing the universal joints in the rear of it. A toggle action within a cover between the clutch pedal and collar relieves the operator of practically all the spring pressure after the pedal has been advanced 2 inches.

The transmission system, the Stutz, which has already been mentioned, is a complete three-point unit in itself, Fig. 5. It embraces a three-speed selective set, a three-quarter floating axle construction, and a double set of internal expanding brakes located side by side. The gearset has both shafts carried on ball bearings, uses nickel steel gears, and the gearbox casting is a unit with the band type casting which encloses the differential.

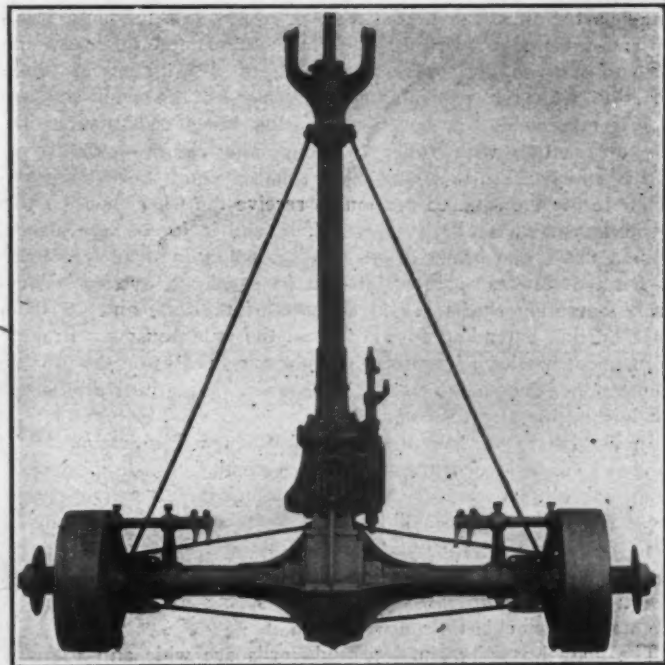


Fig. 5—Rear system of Henderson, showing position of gearbox and torque rods



Scenes at New York brake tests. (Left) Measuring off for Mr. Stewart's position. (Right) Facing car approaching at 30 miles an hour

Tests of Braking Capacity

New York Aldermen Conduct Series of Trials to Discover if Speed Limit May Be Safely Raised

At Speeds in Excess of 25 Miles an Hour More Than a Second is Needed to Stop

SOME valuable information as to the minimum distance within which a fully loaded seven-passenger touring car can stop when traveling at various rates of speed was obtained in the recent brake-tests conducted under the supervision of the New York City aldermanic committee on speed regulations, which is endeavoring to determine whether or not the present speed limits of from 8 to 16 miles an hour could be raised to 20 or 25 miles without endangering the lives of pedestrians.

The committee which made the tests was composed of ten aldermen, Ralph Folks being the chairman. Charles G. Stewart,

To the forward end of the gearbox bolts the rear portion of the torsion tube. The yoke at the forward end of the torsion tube is supported on a frame cross member by two pins, giving a free up-and-down movement for the rear system, and this yoke is free to turn on the torsion tube itself, thereby giving in conjunction with the vertical yoke movement a universal action.

The rear axle is a bevel type, using bevel construction in the differential, with roller bearings carrying the axle-drive shafts which are nickel steel with squared ends, and a conical collar inside the squared portion to receive the wheel hub. The wheel hub has a similarly tapered hole, and is forced into place with a nut. The brake drums are 14 inches in diameter, and each set of brakes operates through an equalizing system. The brake operating shafts are in advance of the axle and carried on a bracket extending forward from the axle housing. Brake adjustment has been simplified by using turnbuckles on the brake connections beneath the front floor boards. Wing nuts are used for locking these turnbuckles.

In looking at the running gear of the new Henderson it is ranged above a steel frame with 4-inch depth, the side members being brought together at the dash and kicked-up 5.25 inches in front of the rear axle. This framework is supported through a set of 38-inch semi-elliptic springs in the front and a set of 50-inch three-quarters springs in the rear. The front axle is an I-section forging dropped between the spring pads and having the steering knuckle tie rod in rear of it.

The body lines are simple: Mudguards are wide and follow the wheel curvature. Plenty of passenger room is obtained, the rear seat being 47 inches wide, and the front seat 41, with a 4-inch space between the front cushions for the gear-shift lever.

general manager of the Automobile Dealers' Association, who believes that speeds up to 30 miles an hour, the limit as designated by the Callan law, should be allowable under the regulations which the committee is at present formulating, proposed the series of tests to prove his contentions. C. S. Henshaw, manager of the E. R. Thomas Motor Company's New York branch holds similar views, and cooperated to the extent of furnishing five Thomas six-cylinder, 40-horsepower touring cars for the trials.

A number of newspaper men and others in the automobile industry accompanied the ten aldermen to the scene of the tests. The spot chosen for the first trials was a lonely stretch on Kings Highway, Long Island, where there was little interference from passing traffic. This thoroughfare was considered to have an ordinary macadam surface.

The object of the experiments was to determine the minimum stopping distance, when the foot or service brakes were suddenly applied with sufficient force to lock the rear wheels. Mr. Stewart claimed that when a car is traveling at various rates of speed, the driver can bring it to a standstill before striking a pedestrian, if the latter is seen and the brakes applied one second in advance. To substantiate his claims, he volunteered to stand in the middle of the road, facing the oncoming machine, and at a distance from a reference point equal to that passed over in one second by the car when traveling at any given speed in miles per hour as indicated by a speedometer.

How the Tests Were Conducted

A tape line was laid across the road and from this a distance corresponding to the car's speed in feet per second was laid off from it. Mr. Stewart stood at this position, facing the oncoming car which was fully loaded with six of the aldermen and the driver, and which had been driven down the road a sufficient distance to allow for its attaining the given speed before reaching the tape. One member of the aldermanic committee carefully watched the car's speed to see that it was correct when crossing the line. At the instant the front wheels crossed this point, the service brakes were applied and the rear wheels locked, the distance from the line to the extreme front point of the car being measured after it had been brought to a stop. Mr. Stewart had a margin of about 7 feet when the car was driven toward him at the 15-mile rate.

The procedure as outlined was followed for rates of speed varying from 15 to 30 miles an hour, with results as given below:

Speed of car miles per hour	Speed of car feet per second	Distance required to stop	Tread
15	22.0	14 ft. 10 in.	Non-skid
20	29.3	25 ft. 1 in.	"
25	36.7	33 ft. 4 in.	"
30 (first trial)	44.0	54 ft. 8 in.	"
30 (second trial)	44.0	48 ft. 8 in.	Smooth
Average macadam road surface.			
Overall length of car, 16 ft. 3 in.			
Weight of car fully loaded, 4450 lbs.			

Mr. Stewart's contention was proved to be true for speeds up to 25 miles an hour, although it was doubtful above that rate,

as shown from the fact that in both trials at 30 miles an hour he was obliged to jump to avoid being struck by the car. With non-skid tread tires, the mark was outdistanced by 10 feet 10 inches, and with smooth treads by 4 feet 8 inches. This difference may have been due to the fact that the driver did not apply the brakes at exactly the same time in both trials, or because there was more tire surface in contact with the road when the smooth treads were used.

Next trials under the same conditions and with the same procedure were made on a smooth asphalt pavement. The results follow:

Car speed, miles per hour	Distance to stop
20	28 ft. 3 in.
30 (first trial)	65 ft.
30 (second trial)	83 ft.

Here, again, the 30-mile speed did not show off to advantage. The tires were smooth treads for these tests, and the widely varying results at 30 miles are due to the striking in the second trial of a wet spot in the street.

The tests show conclusively that speeds up to 25 miles an hour on ordinary streets where there is no appreciable amount of traffic are not excessive, when a driver of ordinary experience is at the wheel. The present city limit of 16 miles an hour might well be raised somewhat, without in any way increasing the hazard where automobiles are used in a sane manner. Of course, there are reckless drivers, and to them the credit for most of the accidents is due.

Speed With Security Quite Possible

In making these tests, the worst conditions so far as weight were imposed. With a total weight of 4,450 pounds, considerable momentum is gained, and requires more force and greater distance in which to stop than if a five-passenger car or a run-about were used.

In commenting on the results obtained, Mr. Stewart said, "In congested districts it is not a question of speed at all. There, more than 15 miles an hour cannot be made under any circumstances and often it is as low as 5 miles. But in the open districts, I think that the regulations should specify that the policeman should use his own discretion before making an arrest, and that he should not arrest a man going at 30 miles an hour if there is no one near to be endangered by that speed. If the speed limit is too low, there will be constant violations. It would be better to raise the limit and have strict observance of the law.

"All automobilists should heartily approve of Alderman Ralph Folks' proposed new legislation to regulate the speed of motor cars, at the same time, we believe by actual tests modern automobiles will show they are built with the idea of having safety as the principal factor while running at liberal rates of speed," said President F. R. Humpage of the Thomas Company, after the test. "By that I mean the up-to-date car is provided with liberal size brakes, capable of stopping within a fraction of a second, if occasion demands, while running at 20 miles an hour.

"In the early days of the motor car the difficulty was not in stopping a car, but in starting it, and the average user was glad to have his machine kept going. Brakes were a matter of last consideration from the manufacturers' viewpoint, for the reason that most of their customers were accustomed to the gradual slowing of a horse-drawn vehicle and did not expect very much from the automobile in the way of prompt stopping.

"We know the perfected automobile brake as it exists today, gives, on account of its large diameter and suitable friction materials, a promptness in stopping that in emergency protects human life and which at all times gives the passengers a feeling of absolute security in the car."

PETER DOELGER, capitalist and one of the leading brewers of New York, will act as host to the orphan children who take part in the annual automobile festivities at Coney Island June 5.

Preparations are being made to entertain as many as 5,000 children on the ride, amusement program and mid-day feast.

Calendar of Coming Events

What the Coming Months Have in Store for the Sport-Loving Automobilist

Shows, Conventions, Etc.

- June 5.....New York City, Annual Orphan's Day.
- June 17-22.....Milwaukee, Wis., Convention and First Annual Show, National Gas Engine Association.
- June 27-29.....Detroit, Mich., Summer Meeting of the Society of Automobile Engineers.
- July 10-20.....Winnipeg, Man., Canadian Industrial Exhibition.
- July 12-14.....Logan, Utah, Fourth Annual Intermountain Good Road Convention.
- July 22-26.....Detroit, Mich., Cadillac Week.
- Sept. 23-Oct. 3.....New York City, Rubber Show, Grand Central Palace.
- Jan. 11-25, 1913.....New York City, Thirteenth Annual Show, Madison Square Garden and Grand Central Palace, Automobile Board of Trade.

Race Meets, Runs, Hill Climbs, Etc.

- May 25.....Washington, D. C., Reliability Run.
- May 30.....Indianapolis, Ind., Speedway, 500-mile race.
- May 30.....Salem, N. H., Track Races, Rockingham Park.
- June.....Portland, Me., Hill Climb, Maine Automobile Association.
- June.....St. Louis, Mo., Reliability Run, Automobile Club of St. Louis.
- June 1.....Philadelphia, Second Annual Contest for the Fletcher Cup, Automobile Club of Philadelphia.
- June 6.....Washington, D. C., Reliability Run, Washington Post.
- June 8.....Narberth, Pa., Track Races, Quaker City Motor Club.
- June 20.....Algonquin, Ill., Annual Hill-Climb, Chicago Motor Club.
- June 20-22.....Portland, Me., Reliability Run, Pine Tree Motor Contest Association.
- July 3-5.....Belle Fourche, S. Dak., Second Annual Track Meet.
- July 4.....Petersburg, Ind., Track Meet.
- July 4.....Riverhead, L. I., Road Race.
- July 4-5.....Taylor, Tex., Track Meet, Taylor Automobile Club.
- July 4-6.....Old Orchard, Me., Beach Meet, Old Orchard Automobile Association.
- July 5-6.....Tacoma, Wash., Road Races, Tacoma Automobile Club and Tacoma Carnival Association.
- July 15.....Milwaukee, Wis., Reliability Run, Wisconsin State Automobile Association.
- Aug. 8-10.....Galveston, Tex., Beach Meet.
- Aug. 23-24.....Elgin, Ill., National Stock Car Races, Chicago Motor Club.
- Sept. 2.....Indianapolis, Ind., Track Races, Speedway.
- Sept.....Chicago, Ill., Commercial Vehicle Test, Chicago Motor Club.
- Oct. 7-11.....Chicago, Ill., Reliability Run, Chicago Motor Club.
- Oct. 12.....Salem, N. H., Track Meet, Rockingham Park.
- Nov. 6.....Shreveport, La., Track Meet, Shreveport Automobile Club.

Foreign

- May 26.....Barcelona, Spain, Cup of Spain Road Race, Automobile Club of Catalonia.
- May 26.....Sicily, Targa Florio.
- June 15-23.....Vienna, Austria, International Tour, Austrian Automobile Club.
- June 25-26.....Dieppe, France, Grand Prix de France, Automobile Club de France.

Kennedy Talks on Truck Selling

William P. Kennedy, head of the Alco transportation cost bureau, delivered an address before the Motor Truck Club May 15 on "Administrative Engineering and Salesmanship in the Commercial Car Field."

Mr. Kennedy said that there was a radical difference between selling pleasure cars and commercials and that the faculty of comparative analysis should be a prime essential in the truck salesman.

There was a good attendance at the meeting despite the counter attraction at Travers Island.



Line-up of cars used for service brake tests on King's Highway, Long Island

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 and the Automobile Magazine (monthly), July, 1907.

Bad Weather Fears—Good Weather Facts

DON'T cast principles to the winds when local conditions become temporarily adverse. Many dealers and salesmen have been guilty of this within the last few weeks. The spring did not open as anticipated; continuous rains delayed seeding in the big agricultural sections of the country as much as 10 or 15 days; floods in other sections left the roads in such a deplorable state that it was impossible for buyers to take their cars out of the garages; the cotton season was delayed with prospects of a later crop; and many other unfavorable conditions exhibited themselves. With such an apparent landslide of delays to retail sales not a few dealers stampeded. One night they fell into peaceful slumber; sales were a little better than a year ago, prospects were encouraging; all was well. But they awakened with troubles; the weather had turned, the market waned, the enthusiasm failed, salesmen's spirits drooped, the entire business firmament suddenly became overcast; all was wrong. Then came the error. They must sell cars, they must sell them every day, they must sell them every week and they must get deliveries. To do this the only solution that appeared to many was price-cutting and lavish liberality in second-hand car trades. This worked well for a while; but bad weather continued; the stock of second-hand machines jumped by leaps and bounds and soon a new nightmare exhibited itself to the dealer—that of second-hand cars to be got rid of, some

of them at a loss and all of them with more or less difficulty because of allowing too much for them on the new car deal.

This condition exists in not a few sections of the country to-day. It is not a real serious problem, because the natural demand of the country will soon rectify matters. The recent warm days have proven this, for they have brought the buyers out with as much determination of buying as shown in the umbrella field on a rainy day. The demand is there; the cars are manufactured; all that is needed is reconciling these two factors, bringing them together; in a word, having the demand when you have the machines. This condition will arrive. It may be 2 weeks late, but when it comes it will be an avalanche. It is questionable if the ordinary dealer will have a selling force adequate to the requirements, but be assured that it will come.

The dealer must realize that the year is made up of four different seasons, and that while winter may overlap spring, that while spring may apparently forget to give way to summer, and autumn encroach on the borders of summerland, still when the sum total is compiled at the end of the season, the number of days of sunshine, the days of rain, the days of frost, the inches of rainfall, the inches of snow, and the degrees of temperature will average up about the same as in previous years. True, the irregularity may occasion much concern, but it is not such as to cause a surrender of basic business principles. The dealer must exhibit more stability, otherwise his own acts will but add to the uncertainty, and he may be the balance of power to precipitate a crisis, when otherwise nothing more than a brief depression would have occurred. It is up to the dealer to keep the flag flying, and to bear in mind the old adage of "extra steam when the wind is contrary."

When the dealer finds himself face to face with a temporary off-market condition, it is a storm signal to him to protect his bulwarks. Sitting down and gossiping over his misfortunes with others is the shortest route to real trouble. When the storm signal is raised the time has arrived when he should get every salesman in his employ into conference to stiffen his backbone, to widen his business horizon, to reinforce his store of arguments, to, in a word, develop more of the forceful elements of salesmanship. Price-cutting should be the last retreat. By price-cutting he is merely laying up troubles—troubles that he must meet at a later date, if by his hasty action he has not taken steps that will sooner or later entirely remove him from business.

If temporary depressions in business present such conditions that the individual dealer cannot cope with them, dealers' organizations should take up the problem and by concerted action prevent the further widening of a distressing situation. In not a few cities this has actually been done. Within the last few weeks dealers' organizations, which are worthy of the name, have wrestled with the problem and the individuals have been strengthened. Let the dealer remember that he is but one of perhaps 100 in his city, and that the erring acts of the weaker brother bring a burden on the stronger ones. Let the strong one remember that every act of price-cutting of the weaker one injures the entire body. Because of this, co-operation is needed; co-operation to stiffen the weak and make the strong still stronger.

Bay State Blue Law Snarl Jail for Capital Joy Riders

Automobile Repairmen's Union Opposes Measure Permitting of Sunday Work on Cars

BOSTON, MASS., May 18—As a result of a bill introduced into the Massachusetts Legislature last week by Representative Charles Haigis of Montague there may be an enforcement of the blue laws that will seriously curtail the pleasures of motor-ing in the Bay State this year. It seems that Representative Haigis was appealed to by some of his constituents in Franklin county who were operating a motor 'bus line, and who found that some zealous officials there had dug up some blue laws that would prevent the sale of motor supplies or the making of repairs on Sundays.

So Representative Haigis, in order to straighten the matter out, and reasoning that if the laws were enforced in that county nothing could prevent their being enforced all over the state, brought in his little bill to allow the operation and repair of cars and the selling of supplies for them on the Lord's day. But the officers of the Machinists and Automobile and Carriage Repairmen's Union called a meeting and went on record opposing the bill and sent their resolutions to the State House. The bill would not affect the members of this union anyway, as they all work in service stations of the dealers and do not have to work Sundays. But the officers of the union thought it might be an entering wedge.

It has long been felt by some of those conversant with the motor industry that if ever any officers should desire to become zealous in the performance of their duties they could stop the sale of gasoline, oils, etc., and the repairing of cars, no matter how simple the trouble was, on Sundays. So this bill, if it does not pass, may call attention to this fact, and if a crusade should be made by some of the state societies which object to Sabbath work if a man ran out of gasoline or oil, or had a breakdown, unless he could repair it himself he would either have to leave the car by the roadside or push it all the way to a garage. With work under the ban, the garages would have to close up so it would mean leaving cars by the roadside until after midnight Sunday. As a matter of fact, when Boston has a motor show no cars are permitted to be moved after midnight Saturday until midnight Sunday, so strict are the Bay State laws. Only in emergencies such as a fire could the cars be rolled out.

However, Representative Haigis is one of the strong men of the Legislature, and one who was a candidate for Speaker of the House this year, being very popular, so it is expected that he may be able to push the bill along. The only thing against it is that it is so late that the rules will have to be suspended to admit it, and at this late day it is hard to get that point waived, for a few objectors can block it. So far the matter has not got much publicity and it has apparently escaped the Sabbath Day League, but if a few of these organizations start on its trail the path of the motorists may not be strewn with roses in the Bay State in the future, for the present Legislature has only a few weeks to do things.

Makes Punishment Fit the Crime

BUFFALO, N. Y., May 21—Judge Keeler of City Court has a unique method of fining automobile speeders \$1 for every mile traveled when the machine is traveling faster than allowed by law. For instance, if a man speeds his machine at the rate of 25 miles an hour and the rate allowed by law is 15, the man will be fined \$25 by the court for the offense. Judge Keeler's plan has the hearty indorsement of Chief of Police Regan and the district attorney.

Epidemic of Car "Borrowing" Brings About Introduction of Bill to Make It a Felony

WASHINGTON, D. C., May 21—Congressman Ben Johnson has introduced a bill in Congress to put a stop to motor car stealing here. By the terms of the bill the offense is punishable by imprisonment in the penitentiary of from 1 to 10 years. There is no alternative in the way of a fine. The bill was suggested by the district attorney and is in the exact wording of the New York law on the subject. From March 14 to May 14 twenty-nine motor cars were stolen by joy riders in the district and in every case the machine was abandoned in a damaged condition. In the few convictions made the highest penalty given was 6 months in jail.

Representative Carey has introduced a bill providing that every person operating an automobile or similar motor vehicle in the District of Columbia shall stop whenever it passes a street car which is either taking on or letting off passengers.

WASHINGTON, D. C., May 19.—Holding two colored men under a bond of \$2,000 each on a charge of grand larceny in stealing two motor cars, the district authorities have taken a determined stand in endeavoring to break up the practice of stealing motor cars in this city. Dozens of such cases have been reported in the last few weeks. The prosecution in the last two cases marks a new departure on the part of the authorities in the handling of such cases. Heretofore the "borrowing" of a car has brought the charge of taking property without the consent of the owner. The policy of charging that the motor cars have been stolen makes the offense a felony, with a penitentiary instead of a jail sentence.

Quaker City Stops Noisy Signals

PHILADELPHIA, May 18—Director of Public Safety George D. Porter, through Acting Superintendent of Police George W. Thompson, this week, issued the following order relative to an ordinance of city councils in 1906 prohibiting motorists from employing warning signals producing unnecessarily loud or unseemly noises, which ordinance has just been sustained in an opinion handed down by City Solicitor Michael J. Ryan:

"General Order No. 186, issued June 22, 1906, contains in full the ordinance of councils approved June 18, 1906, requiring motor vehicles to use only as an alarm of warning a toot-horn or horn sounding one note only. This ordinance has been sustained by the city solicitor. Many complaints from citizens have been received concerning the use of signaling devices other than toot-horns producing loud, unseemly and startling noises, tending to terrify pedestrians and disturb the peace and quiet of the city. All such devices are a violation of the aforesaid ordinance and must be discontinued."

The police have received instructions in reporting violations to get the correct license number, time, date and the exact locality where such violation occurred, and all violators are to be prosecuted.

Ohio Registrations Gain 20 Per Cent.

COLUMBUS, O., May 20—According to recent reports sent out by the state automobile department the income for 1911 from automobile tax was \$108,628.37 against \$89,356 in 1910. The net surplus of last year is \$190,711.70, giving a gain of 22 per cent. on the total receipts for 1911. The total number of tags issued January, 1911, was 16,600, while January of 1912 has a record of 20,000 tags issued, 16,955 of which were gasoline cars, 2,287, electrics. The electric cars show a gain of almost 100 per cent.

Flood Mars Road Meeting Nevada on Through Route

High Water Interferes with Travel and Attendance at National Association Convention is Small

NEW ORLEANS, LA., May 20.—Flood conditions in the state interfered decidedly with the convention of the National Good Roads Association held here Thursday, Friday, Saturday and Sunday. Irregular train service to interior points in Louisiana and Mississippi affected the territory from which the greatest number of delegates was expected, but when the first session was called to order practically every state in the union was represented.

Pledges from the Federation of Women's Clubs to aid the good roads movement constituted by far the most important feature of the congress. Miss Maud Jones, secretary of the National Good Roads Association, in addressing the general meeting Thursday night outlined the plan by which the Good Roads Association is securing the aid from women's clubs all over the nation. In securing the aid of the Louisiana Federation of Women's Clubs Miss Jackson expects to see 1,000 miles of roadway in the state improved that otherwise would not have been reached this year in the regular course of improvements.

Most of the time of the congress was devoted to technical questions of road building. Relief maps, models of roads showing advantages of bedding and surfacing materials under different conditions, plans and blue prints were exhibited in great number. Reports from delegates from different states apparently established without question the advantage of using convict labor on public road work.

Foreign Touring in American Cars

An instalment of six-cylinder cars which will figure in the Packard company's European rental plan has been shipped to France. The cars will be operated in connection with the Paris service depot.

The announcement of this service has aroused interest because it offers a convenient avenue of escape from the numerous petty annoyances which beset Americans in getting through the official red tape of Europe. Each automobile is manned by a driver who is especially trained for continental travel. He assumes all responsibility for the automobile and its maintenance, including tires.

New cars of the current model, and fully equipped with top, windshield, speedometer and trunk rack, have been set apart for the rental service. There is nothing about the car or the chauffeur's appearance to distinguish the vehicle from one privately owned.

The charge is \$30 a day in France and \$35 a day in other countries, the car to carry any number of passengers up to six.

Minnesota to Spend \$6,700,000

MINNEAPOLIS, MINN., May 20.—Constitutionality of the Elwell road law has been affirmed by the state supreme court, which gives Minnesota opportunity to build \$6,700,000 of roads at once without adding to state or county taxes. This is based on a bond issue possible to cover the expenditure for 10 years ahead. It is calculated that good roads can be built under this law at a cost of \$1.12 a year for each quarter section of land benefited. Northern Minnesota proposes under the law \$2,250,000 of good roads, in a district where there are now few roads. One is from the northern boundary to the twin cities, another from Duluth to the twins. Under the law the county will issue certificates of indebtedness for the whole cost payable in from 1 to 10 years.

Ely Commercial League Maps Out What is Said to Be the Shortest Transcontinental Road

ELY, NEV., May 17.—Nevada, in common with all western states, is after transcontinental travel and the geographical location of Ely makes this town the logical dividing point for travel over the central route, to either San Francisco or Los Angeles. Coming from Chicago or other eastern points the most direct route to the coast is across Iowa, Nebraska and Wyoming, or Kansas and Colorado, meeting at Salt Lake, Utah, and then direct to Ely where the route will split for Los Angeles or San Francisco. To reach Los Angeles the route goes direct from Ely to Tonopah, then to Silver Peak, Oasis and down the Owens river to Los Angeles. Leading to San Francisco the route goes from Ely to Eureka, Austin and Reno, Nevada, and then on to San Francisco.

Secretary Hoag, of the Ely Commercial League, now has these routes mapped. In the past, while it was known this was the shortest route to California in actual mileage, it was supposed to be impractical, simply because no one had ever attempted to find the way through. Mr. Hoag has covered the routes personally and shows by mileage and time that they are the shortest that can be found.

School Children to Help Roads

LEADVILLE, COLO., May 18.—Lake county, Colorado, is the first community to call school children to the rescue in the effort to better road conditions. In order to do their share in constructing a main highway across Colorado, a committee of leading citizens of Leadville have organized a Good Roads day, May 17. On this date every person in the county who is able, is expected to go out and work on this road. Business houses will close, making of it a regular holiday. It has also been arranged to close the schools on that day and some five hundred school children, boys and girls, will spend their time throwing small rocks out of the roadway while men are engaged with pick and shovel. In one case the manager of a well known mine will furnish fifty men with shovels, picks and wheelbarrows, who are to be turned over to foremen to work under their orders. The whole distance of the road is to be divided into districts and placed under competent road builders.

Road Builders to Go It Alone

At a special meeting of the board of directors of the American Road Builders' Association, held at Hotel Astor, New York City, May 10, it was voted to withdraw from further participation in the joint road congress which the association had considered holding in co-operation with the American Association for Highway Improvement, the American Automobile Association and the National Association of Road Material and Machinery Manufacturers. This action was taken after several weeks of deliberation and conferences among committees of the several associations, and is the final action of the American Road Builders' Association.

HARRISBURG, PA., May 20.—In compliance with a request for the reduction of tolls made by the Motor Club of Harrisburg, the People's Bridge Company, owners of the bridge across the Susquehanna river at the Market street crossing at Harrisburg, announced this week a reduction of toll for automobile pleasure vehicles. Hereafter the toll for all such vehicles, whether two-passenger or larger, will be five cents for car and driver and one cent for each additional passenger.

Oklahoma Trunk Roads

Highway Department to Gridiron the State With System of Improved Highways

OKLAHOMA CITY, OKLA., May 18.—The state highway department is doing work preparatory to the construction of an extensive system of modern highways which will gridiron the state. The department has adopted plans for a trunk highway to extend from the Kansas line to the Red river on the southern boundary of Oklahoma. It will parallel the Santa Fé Railroad, and diverging in the vicinity of Davis one branch will follow a southeasterly course to Gainesville, Texas, the other will run through the old Chickasaw capital, and crossing the Red river north of Denison will have its terminus at Paris, Texas. This road is to form Oklahoma's link in the proposed Meridian road from Galveston to Winnipeg, Canada. Another highway which the department has mapped out is to be a rehabilitation of the old Chisholm trail that ran due south from Caldwell, Kansas, to Ringgold, Texas, paralleling the Chicago, Rock Island & Pacific Railroad. Still another trunk highway is to parallel the Missouri, Kansas & Texas north and south through Oklahoma.

An east-and-west highway is to run from a point on the Arkansas line east of Muskogee to the Texas panhandle line in Beckham county. Still another trunk road is to run from the Kansas line north of Bartlettville to a point near Atoka.

Opening Galveston's Causeway

GALVESTON, TEX., May 18.—What promises to be the most interesting feature of the program that has been prepared for the formal opening of the causeway that has just been finished across Galveston Bay, connecting this city with the mainland, will be the motor car parade. This event is to take place Saturday, May 25. Entries already received indicate that more than 2,500 cars will be in line. They will come from all parts of the state. Houston will be the concentrating point for the cars on May 23 and 24. The garages of that city have agreed to give free storage to cars from out of town. The parade will leave Houston at 8:30 o'clock of the morning of May 25, led by a car to be occupied by Governor O. B. Colquitt and other distinguished guests. This car will be escorted by a Galveston contingent occupying fifty cars.

SIoux FALLS, S. D., May 18.—Citizens along the South Dakota Scenic Highway between Sioux Falls and Rapid City, S. D., have organized to work for the extension of the famous Wau-bonsie trail between Shenandoah, Iowa, and Omaha, to make a continuous thoroughfare through the Bad Lands, the Black Hills, and on to the Yellowstone Park. Pennington county will build a \$50,000 bridge across the Cheyenne and a special boat is being made to cross the Missouri.

BALTIMORE, MD., May 20.—The State Good Roads Commission is preparing for more improved highways and has advertised for bids for building three sections of state highway along the Baltimore-Washington boulevard. These new sections are in Prince George's and Baltimore counties.

ST. PAUL, MINN., May 20.—The state highway commission has begun construction of the first stretch of rural concrete road, 1,300 feet in all, in Steele county, as an experiment. The roadway is to be for mixed traffic, 20 feet wide, with 8-foot concrete center.

Planning for Cadillaqua

Detroit Preparing for Monster Demonstration of Its Importance in the Manufacturing World

DETROIT, MICH., May 20.—The city of Detroit is planning to celebrate the 211th anniversary of its founding with a gigantic carnival designed to be an annual event, and to make the city the carnival town of America. This celebration is to be known as Cadillaqua, a name which seems to fit the style of carnival Detroit will present. The first three syllables indicate the reason for the celebration. Antoine de la Motte Cadillac, in the year 1701, founded the fort on the Detroit River which has grown into one of the first industrial cities in the land. The very location of the city makes a water fete possible and unique.

The celebration this year will begin the night of Monday, July 22, and will continue 4 days and 5 nights. The foremost industrial, mercantile and financial interests in Detroit are back of the carnival, and between \$200,000 and \$250,000 will be spent in making it the biggest municipal show from an industrial and historical standpoint ever presented in the United States.

Most of the world knows Detroit's position as an automobile manufacturing center, and, not unnaturally, Cadillaqua will pay particular attention to the motor car.

Two of the land parades will be of particular interest to automobilists. One is being advertised as a \$25,000,000 parade, and in it will be seen 12,000 motor cars, the majority made in Detroit. The decorations of these cars will be regulated so as to promote harmony and the general effect. This automobile land parade may be better described as an industrial pageant. It will be made up of floats contributed by the leading Detroit industries, and it has already been designed to outclass completely other industrial parades put on at various times in various American municipalities. These floats are now being built in tremendous buildings specially arranged for their construction.

The automobile committee, headed by H. J. Porter, believes that at least 4,000 out-of-town cars will be in Detroit during Cadillaqua week. For their accommodation an entire hotel has been chartered, and parking spaces arranged within a block of this hotel. Parking spaces have been arranged on Belle Isle for convenience during the hours when the major portion of the events are being held on the river and the canals of the Isle. An invitation is to be sent to each of the leading motor clubs of the East, South, North and Middle West. This invitation was written after considerable examination of ancient documents and research among the manuscripts in half a dozen libraries. It is a copy of the words, the expression and the spirit of the French documents of two centuries ago. The wording and orthography are correct. The printing is done by hand-made wooden type. The paper used is also hand-made and more than 10 years old. The wax seal affixed to the invitation is a copy of the coat of arms and seal of Cadillac himself.

The thirty-four automobile manufacturing plants in Detroit will keep open house during Cadillaqua week for the purpose of displaying their wares and their modes of construction to people who know something about automobiles. These manufacturing factories are supplementing the official invitation by invitations inserted in all of their national advertising.

OKLAHOMA CITY, OKLA., May 18.—The Oklahoma City Automobile Club is devoting its efforts toward arousing interest in the good roads movement. It was organized 5 years ago and since that time it was largely responsible for the voting of \$400,000 in bonds by the taxpayers of this city for an extensive park and boulevard system.

BULLETIN News of the Week Condensed



Arthur J. Moulton, of New York, who drove his Simplex car over 16,000 miles in Africa and Europe

TOURING in Southern Algeria—Arthur J. Moulton, of New York City, recently toured through Southern Algeria with a party in a Simplex car. The party covered more than 16,000 miles of road in Europe and Africa and passed through sections where automobiles were unknown.

Minneapolis Orphans' Parade—The Automobile Club of Minneapolis, Minn., has set June 19 for Orphans' Outing Day. Louis Koch will be chairman of the committee.

McClurg Tire in Buffalo—The McClurg Tire Company, Boston, Mass., has established a branch office in Buffalo, N. Y., under the management of J. L. McClurg.

Electric Vehicle Club Outing—The first field day of the Electric Vehicle Club of Boston, Mass., is to be held June 5 at the New England Kennel Club, Braintree, Mass.

Lippincott Heads Automobile Bureau—Job H. Lippincott has been appointed assistant secretary of state, in New Jersey, and will be in charge of the automobile bureau.

Knutzen Takes Shock-Absorber Agency—G. Knutzen, western mining expert, has settled in Minneapolis, Minn., and will take the agency for the J. M. shock-absorbers.

Federal Rubber Company's Branch—The Federal Rubber Manufacturing Company has opened a new branch showroom at Fourteenth street and Hennepin avenue, Minneapolis, Minn.

Kissel Company Leases Property—The Northwest Kissel Kar Company, Minneapolis, Minn., has leased property at 237 West Main street, St. Paul, Minn., for a sub-branch. J. F. Lynch will be in charge.

Jackson Company of Boston Moves—The Charles A. Jackson Company, Boston, Mass., agent for the Aplco lighting system, has moved into new quarters on the second floor of the Motor Mart in Park square.

Rath Joins Chevrolet-Detroit—Joseph F. Rath, with the Buick Motor Car Company, Buffalo, N. Y., has resigned to accept the general managership of the Chevrolet-Detroit branch which will be opened in Buffalo in a few weeks.

Sumner Company's New Quarters—The George Sumner Company, Inc., which represents the Rayfield carburetor in Boston, Mass., has located at 755 Boylston street, where it has a well-equipped mechanical department. J. K. Dalton is in charge of the offices.

Driven Overland to Purchaser—The Pierce-Arrow Motor Car Company recently delivered to Brewster, Gordon & Company, Rochester, N. Y., a 5-ton motor delivery truck by running it overland to that city. The truck started at 3 o'clock, reaching Rochester at 8:20.

New Dumping Body for Trucks—The General Motor Truck Company, Detroit, Mich., is equipping some of its trucks with a novel dumping body which is raised by power of the motor, transmitted through the gearbox to a winch drum. The tailboard works automatically. Two levers at the driver's seat operate the mechanism.

Dealers Elected Officers—President John H. MacAlmant, of the Boston Automobile Dealers' Association, and Charles Addison Malley, who has the Universal truck in Boston, were elected sergeants of artillery and infantry, respectively, at the last meeting of the Ancient and Honorable Artillery Company, Boston's noted military body.

Test Efficacy of Law—The circular letter by William A. McCormick, president of the United States Constitution Protective League, declaring that the license law is unconstitutional and payment of the fee is unnecessary, has been forwarded to the secretary of state at Madison, Wis. He says that if McCormick will drive his car unlicensed into the state he will have immediate test of the efficacy of the law.

New Orleans Bids for Automobiles—Bids have been opened by the city sewerage and water board, New Orleans, La., for two service motor trucks.

Minnesota Registration Over 20,000—The registration of automobiles in Minnesota has passed the 20,000 mark and the secretary of state looks for 30,000 in 1912.

Kelly-Springfield's New Quarters—The Kelly-Springfield Tire Company is now occupying its new branch store and service station at 1421 North Charles street, Baltimore, Md.

Church Is Stoddard-Dayton Sales Manager—Evans Church has been appointed sales manager of the Stoddard-Dayton and Columbia departments of the United Motor Company, Philadelphia.

Reynolds Succeeds Wade—C. J. Reynolds has been appointed purchasing agent of the Studebaker Corporation, Automobile Division, Detroit, Mich., in place of F. A. Wade, who has resigned.

Calder with Cadillac Company—John Calder will assist the Cadillac Motor Car Company, Detroit, Mich., in the general organization and production work necessitated by its rapidly increasing business.

Will Abolish Grade Crossings—An effort is to be made to abolish grade crossings in St. Louis County by the Automobile Club of St. Louis. The county officials have been aroused and will assist in the work.

A Motor Bookcase—The Hagerstown, N. Y., public library is putting the automobile to a novel use in delivering books from door to door in rural communities. The books are arranged on shelves on each side of the vehicle.

Howard Is Cadillac Sales Manager—E. C. Howard has been appointed sales manager of the Cadillac Motor Car Company, taking the place of E. R. Benson. Mr. Howard has been connected with the concern for 5 years.

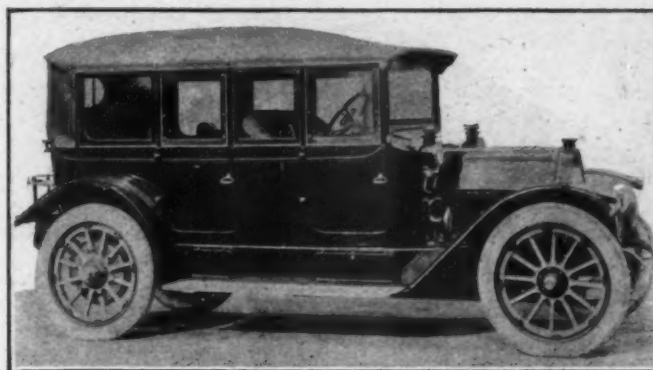
Fisher Canadian Manager—Frank E. Fisher has been appointed manager of the Studebaker Corporation of Canada, Limited. Mr. Fisher has been placed in full charge of the Studebaker business which centers at Walkerville, Ont.

Change of Business Policy—The Automobile Sales Corporation, Philadelphia, Pa., at present distributor of both the Cadillac and Peerless, will in the near future undergo a change of business policy, in that the company will handle the Cadillac exclusively.

Cole Factory in Omaha—C. P. Henderson, sales manager of the Cole Motor Company, recently established a factory branch in Omaha, Neb., for the sale of Cole cars. For the present the salesroom will be at 1102 Farnam street. E. E. Butler will be in charge.

Philadelphia's Orphans' Day Outing—The fifth annual Orphans' Day Outing of the Quaker City Motor Club will be held on Wednesday, June 12, 1912. A. T. James is chairman of the committee having charge of this feature, assisted by Evans Church, William C. Jackson and Edwin H. Lewis.

Accessory House in Utah—The Salt Lake City automobile



Collapsible limousine, Columbia Knight, built for H. Runkel

trade field was invaded recently by the first exclusive automobile accessory and tire house when the Bertram Motor Company opened a branch at 2564 Washington avenue. This firm operates houses at Salt Lake City, Utah and Boise, Idaho. Louis A. Vidy is in charge.

Automobilists Aided by Police—Automobilists will be aided by the police in Philadelphia in the recovery of lost license tags by an order of Superintendent of Police Taylor to the effect that in the future policemen finding tags will forward them immediately to the Detective Bureau in the City Hall, where they will be held until claimed.

Columbia Has Collapsible Limousine—The Columbia Motor Car Company, Hartford, Conn., has built for H. Runkel a Columbia Knight car fitted with a Springfield collapsible limousine body which combines every feature of a coach body with those of an open touring car. The change from an open to a closed type is easily and quickly effected.

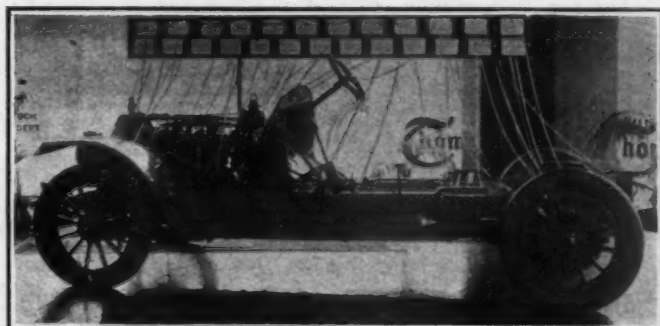
McDonald to Manage Narragansett—J. P. McDonald, a member of the Advisory Board of Governors of the Eastern Department of the Touring Club of America, who is an enthusiastic motorist and who has been well known to the trade as manager of the Hotel Lenox, Boston, Mass., has been made manager of the Narragansett at Providence, R. I.

Salesmen Carry Farm Hands—As farmers in the Middle West have been too busy ploughing to talk cars, the salesmen of the United States Motor Company in Ohio, Indiana, Illinois, Missouri, Iowa and Nebraska, are traveling with extra farm hands who do the ploughing and other work while the farmers listen to the salesmen or take demonstrations.

Thomas Silent Salesman—The Thomas Motor Company of New York, New York City, has an interesting window display at its showrooms, 1920 Broadway. It consists of a Thomas six chassis, to every part of which is attached a ribbon leading to a card on a board suspended above the chassis which gives the name of the part. The company calls the arrangement the "silent salesman."

From Coachmen to Chauffeurs—A striking commentary of the rout of the horse by the automobile is instanced in Syracuse, N. Y., where the Chauffeurs, Automobile Drivers and Automobile Workers Association of Onondaga County was originally the Coachmen's Association, established in 1888 as a sick, death and protective order of coachmen in private families. It has 120 members, as against 100 before.

Houston Automobile Dealers' Association—The Automobile dealers of Houston recently formed what is called the Houston Automobile Dealers' Association. Its purpose is to advance the automobile and allied interests in this city and the state of Texas. The officers are H. C. Skinner, W. H. Sprong, treasurer, and W. F. Gordon, secretary. The association expects to use its efforts and influence to secure from the state the enactment of proper laws relating to the automobile interests.



Interesting window exhibit at the New York Thomas salesrooms



New type of G-M-C automatic dumping truck body

News of the Garages

Large Garage in Atlanta—W. L. Peel will erect a garage at Peachtree street and Merriitts avenue, Atlanta, Ga., to cost \$50,000.

Jeffersonville Will Have Garage—S. E. Pope has arranged to have a large garage built near the opera house at Jeffersonville, Vt.

Jacobs to Build—T. H. Jacobs has purchased the Christian Science Church building at Wausau, Wis., and will remodel it into a garage.

Beginning Work on Garage—Congdon & Deslauriers have started workmen erecting a public garage for them on Hope street, Bristol, R. I.

Plans Approved for Haverhill Garage—White & Durgin have approved plans for a large fireproof garage on Main street, Haverhill, Mass., that will accommodate a large number of cars.

New Haven Garage Expensive—Lieutenant-Governor Dennis A. Blakeslee and Frank C. Woodruff have completed a garage at 213 Crown street, New Haven, Conn., that represents an outlay of \$42,000.

Enlargements Being Made in Northampton—The Buick Garage on Centre street, Northampton, Mass., is being enlarged with wings on both sides and an electric elevator is also being installed in the building.

Makes Two-Story Addition—To take care of the increasing business the owners of the Mystic Automobile Station at New London, Conn., have been forced to build an addition of two stories on the present structure.

Spencer to Have New Garage—Harold P. and Charles H. Andrews have started work upon a public garage on Cherry street, Spencer, Mass., that will be equipped with modern machinery and a gasoline motor for power.

New Machinery Now Installed—The installation of new machinery at the Tremont garage, Lowell, Mass., has been completed so that now it is possible to make any part of a motor car needed to replace one needing repairs.

New Garage Under Contract—The Smith Construction Company has taken the contract to build a garage on the corner of Chestnut and Kirk streets, Morgantown, W. Va., and has promised to have it completed in 90 days.

Getting Ready for Touring Season—The Troy & Blanchard Company, Newport, Vt., has started work on a large garage on Main street and Northern avenue that will be completed before the summer touring season begins.

Another Garage for Portsmouth—The auditorium rink building, Portsmouth, O., is to be remodeled for housing

machines. It will take the agency for the Speedwell car in Ohio. Repairs will be started at once to make building suitable.

Hotel Changed to Garage—Extensive alterations have been started on the old Vermont House at Wilmington, Vt., transforming it into a public garage with a machine shop on the first floor and storage accommodations on the floors above.

New Garage Progressing Rapidly—Work on the concrete garage being erected on Eighth street, Indiana, Pa., for the Indiana Motor Company is progressing nicely. When completed it will be one of the most thoroughly equipped buildings in this part of the state for the purpose.

Dewhurst to Enlarge Garage—Thomas B. Dewhurst, proprietor of the Dewhurst Garage, Lexington, Ky., is planning the erection of an addition to his plant. The building will be of corrugated iron and will be used as a storeroom. The approximate cost is \$600.

Building Four Garages—George Brothers, Pittsburgh, Pa., have started the erection of four buildings on Craig street on ground formerly occupied by Luna Park. All will be of reinforced construction, fireproof and of decorative tile construction. One with 16,000 square feet of floor space will be used by the Franklin Automobile Company and the other three by the Goodrich Tire Company, the Mack Motor Truck Company and the Saurer Motor Truck Company. Each of the latter three will be two stories high.

Automobile Incorporations

AUTOMOBILES AND PARTS

BOSTON, MASS.—Michigan Motor Company; capital, \$50,000; to deal in automobiles. Incorporators: W. E. Burke, L. Furry.

CAMDEN, N. J.—Auto-Sales Company; capital, \$150,000; to engage in the automobile business. Incorporators: C. H. Friars, E. H. Weaver, R. M. Snyder.

CAMDEN, N. J.—Point Breeze Motordrome Association; capital, \$50,000; to conduct an automobile racing business. Incorporators: F. Dittmar, W. C. Sykes, A. R. Sloan.

CINCINNATI, O.—Eddy Automobile Company; capital, \$5,000; to sell automobiles and operate a garage. Incorporators: Horace T. Eddy, Ferd. A. Wagner, A. C. Shattuck, A. C. Shattuck, Jr.

DETROIT, MICH.—Ideal Motor Car Company; capital, \$300,000; to manufacture freight automobiles.

DOVER, DEL.—Randolph Motor Truck Company; capital, \$100,000; to manufacture pleasure and freight automobiles.

DETROIT, MICH.—Long Manufacturing Company; capital, \$300,000; to make radiators. Incorporators: Frederick H. Rike, Edward B. Fleisch, Joseph McDowell.

EAST ORANGE, N. J.—Eastern Motor-Racing Association; capital, \$50,000; to deal in automobiles. Incorporators: H. H. Picking, C. O. Geyer, F. E. Ruggles.

INDIANAPOLIS, IND.—Henderson Motor Car Company; capital, \$100,000; to make and deal in automobiles. Incorporators: L. Carter, R. P. Henderson, C. P. Henderson, E. E. Rogers, C. S. Ricker.

INDIANAPOLIS, IND.—White Automobile Company; capital, \$2,000; to sell cars. Incorporators: R. D. Eaglesfield, J. H. Darlington, G. W. Fuller.

LOUISVILLE, KY.—Commercial Motors Company; capital, \$10,000; to manufacture and sell automobiles. Incorporators: Harry B. Fitch, R. J. Hurt, R. E. Scharf.

MANITOWOC, WIS.—Wisconsin Aluminum Foundry Company; capital, \$25,000; to manufacture automobile parts. Incorporators: Henry Stahl, Bruno Dallwig, Abram Schwartz.

MORRISTOWN, N. J.—Spencer-Wilkie Motor Car Company; capital, \$30,000; to engage in a general automobile business. Incorporators: E. A. Carpenter, G. P. Spencer, W. W. Wilkie.

NEWARK, N. J.—Splitdorf Electric Company; capital, \$3,500,000; to manufacture ignition and lighting devices, magnetos, coils, spark-plugs, windshields, carbureters and motors. Incorporators: J. Franklin Alvord, J. Splitdorf, J. R. Viles, C. W. Curtis, B. S. Keefer.

NEW CASTLE, PA.—Highland Automobile Company; capital, \$3,000; to engage in the automobile business. Incorporators: Harry McKibben, George Hamilton, Tony Turner.

NEW YORK CITY.—C. & C. Auto Company; capital, \$500; to deal in automobiles. Incorporators: John H. Ciancimino, Frank L. Ciancimino.

NEW YORK CITY.—Sherman Square Automobile Renting Company; capital, \$8,000; to buy, sell and rent automobiles. Incorporators: William S. MacMichael, William G. Johnson, John T. Goodwin.

NEW YORK CITY.—Simplex Aluminum Solder Company; capital, \$25,000; to manufacture aluminum solder, repair automobile parts, etc. Incorporators: Charles R. Erkens, Charles Decker, Henry Bender.

NEW YORK CITY.—Suburban Equipment Company; capital, \$10,000; to manufacture gasoline engines, machinery, etc. Incorporators: Harrison Gray Otis, Walker L. Otis, Charles A. Barker.

PELHAM MANOR, N. Y.—Diamond Motor Car Company; capital, \$10,000; to manufacture and deal in automobiles, etc. Incorporators: Carl W. Runklett, Charles W. Jaycox, Frank Davis.

PITTSBURGH, PA.—Alpine Motor Company; capital, \$25,000; to manufacture and deal in automobiles. Incorporators: James F. Sweeney, H. F. Bott, C. Z. Fote.

PORTLAND, ME.—Maine Motor Car Company; capital, \$50,000; to succeed the Maine Motor Carriage Company.

Motor Fire Apparatus

Minneapolis Buys Cars for Chiefs—The Minneapolis, Minn., council fire committee has bought three Cole roadsters from the Haynes-Knutson Auto Company for use by three district chiefs.

Grand Rapids to Buy More Trucks—The common council, Grand Rapids, Mich., has allowed the board of police and fire commissioners \$20,000 for further motorizing the fire department apparatus.

Motor Apparatus for Revere—The board of fire engineers of Revere, Mass., has voted to purchase a combination hose and chemical and also a runabout for the newly elected chief of the department, Arthur Kimball.

Middleboro Wants Motor Apparatus—The legislature has given the town of Middleboro, Mass., authority to borrow money to improve its fire department and the selectmen are now looking into various makes of motor apparatus.

Akron to Increase Equipment—Akron, O., is about to advertise for another piece of automobile fire-fighting apparatus. That city was one of the first in the country to introduce horseless fire engines.

Bridgeport for Motor Apparatus—Believing that the horses should be ousted from the fire department, the board of fire commissioners of Bridgeport, Conn., will make an effort to equip all fire houses with motor-driven apparatus.

Automobile Incorporations

PORTLAND, ME.—Presto-Inter-Rim Company; capital, \$200,000; to manufacture, sell and deal in automobiles. Incorporators: M. A. Thurston, H. P. Sweetser.

SEATTLE, WASH.—Kum-and-Go Automobile Company; capital, \$1,000; to operate an automobile bus line to and from Day Island and Mt. Tacoma, Wash. Incorporators: Otis Cutting, Charles Atherton.

ST. JOHNSBURY, VT.—Consolidated Automobile Company; capital, \$10,000; to engage in the automobile business. Incorporators: Howard B. Blossom, Harland E. Howe, Mae L. Lacasse.

TAMPA, FLA.—Mitchell Auto Sales Company; capital, \$15,000; to deal in automobiles. Incorporator: M. B. Hubbell.

YOUNGSTOWN, O.—Poland Transit Company; capital, \$3,000; to conduct an automobile passenger transportation line in and around Youngstown. Incorporators: W. F. Leedy, Frank H. Shilling, F. Mason Wick, I. C. Shilling, R. C. Randle.

GARAGES AND ACCESSORIES

CHARLOTTE, N. C.—Como Automobile Supply Company; capital, \$50,000; to conduct an automobile supply business. Incorporators: Moorehead Jones, C. C. Coddington.

CLEVELAND, O.—West 25th Street Supply & Garage Company; capital, \$10,000; to engage in the garage and automobile supply business. Incorporators: Henry W. Louis, F. M. Brady, Katherine Louis, T. J. McCarty, M. A. McCarty.

DULUTH, MINN.—Zenith Tire Service Company; capital, \$50,000; to manufacture and repair tires. Incorporators: Walter T. Rightmeyer, Harold C. Russell, Alice E. Rightmeyer.

HESSELVILLE, IND.—Standard Rubber Tire Company; capital, \$20,000; to manufacture tires and other rubber goods. Incorporators: E. D. Loewenthal, O. A. Wheeler, Harry Williams.

INDIANAPOLIS, IND.—Smart Manufacturing Company; capital, \$50,000; to manufacture puncture proof tires. Incorporators: E. R. Frye, W. E. Cummings, D. W. Reed.

NEWARK, N. J.—North Jersey Auto Supply Company, Inc.; capital, \$80,000; to engage in a general automobile supply business. Incorporators: E. C. Mohr, C. G. Butler, F. W. Mead.

NEW YORK CITY.—Acton Tire Repair Company; capital, \$3,000; to conduct a tire repair plant. Incorporators: Patrick Curry, William Koopman, Lawrence Keringan.

NEW YORK CITY.—B. F. Goodrich Company of New York; capital, \$45,000,000; to manufacture tire and rubber goods.

NEW YORK CITY.—Ball Bearing Novelty Company; capital, \$6,000; to manufacture automobile accessories. Incorporators: Alex B. Greenberg, Alfred Pioneer, Jacob Solomon.

SAVANNAH, GA.—Savannah Auto Repair Company; capital, \$100,000; to conduct a repair shop and deal in automobile supplies and accessories. Incorporators: Wm. T. DeBorde, D. D. Pounder, Shelby Myrick.

SPRINGFIELD, MASS.—Blue Ribbon Garage Company; capital, \$2,000; to engage in the garage business. Incorporators: Albert Karp, Harry Bland, Jno. G. Gottesmann.

SPRINGFIELD, O.—Gem Garage Company; capital, \$10,000; to deal in automobile accessories and conduct a garage and repair shop. Incorporators: Charles J. Watts, L. V. Watts, E. M. Watts, Frank J. Eberle, C. M. Strunk.

SWISSVALE, PA.—Combination Steel and Pneumatic Tire Company; capital, \$200,000; to manufacture and sell all kinds of tires. Incorporators: W. K. Weaver, W. A. Knorr, W. H. Kiser.

TOLEDO, O.—Disco Auto Starter Company; capital, \$10,000; to manufacture automobile engine starters. Incorporators: H. A. Cavanagh, R. S. Holbrook, L. R. Roper.

Boston Gets Patrol Wagon—The first motor patrol wagon to be installed in the Boston Police Department was turned over to Police Commissioner O'Meara last week. It was made by the White company, and has the ambulance feature also. It will be installed in the West Roxbury district. This is the beginning of a plan to eliminate the horse-drawn vehicles.

Houston Orders Many Trucks—The city commission of Houston, Tex., recently ordered an automobile fire engine pump, an automobile aerial truck and an automobile fire service truck. A truck arranged so that a steam engine may be mounted thereon will also be ordered soon. The fire department is already equipped with motor-driven chemical apparatus.

Montreal Adds Motor Fire Engine—The city fire-fighting apparatus of Montreal, Ont., is to be augmented by the addition of an elaborate motor equipment of which a considerable part will be installed within a month. A motor engine, a motor ladder wagon, and a motor hose wagon will be first installed at headquarters, Craig street, the engine being the first to be put in operation. This is expected to be ready for use within a week.

Shreveport Spends \$30,000—Nearly \$30,000 has been ordered expended on motor equipment for the Shreveport, La., fire department. An automobile chemical and hose wagon and two pumping engines to cost \$20,000 have been ordered from the American-La France Fire Engine Company. The Knox Automobile Company will furnish a tractor to cost \$3,250 and the Cadillac Motor Car Company will furnish the car for the chief of the fire department.

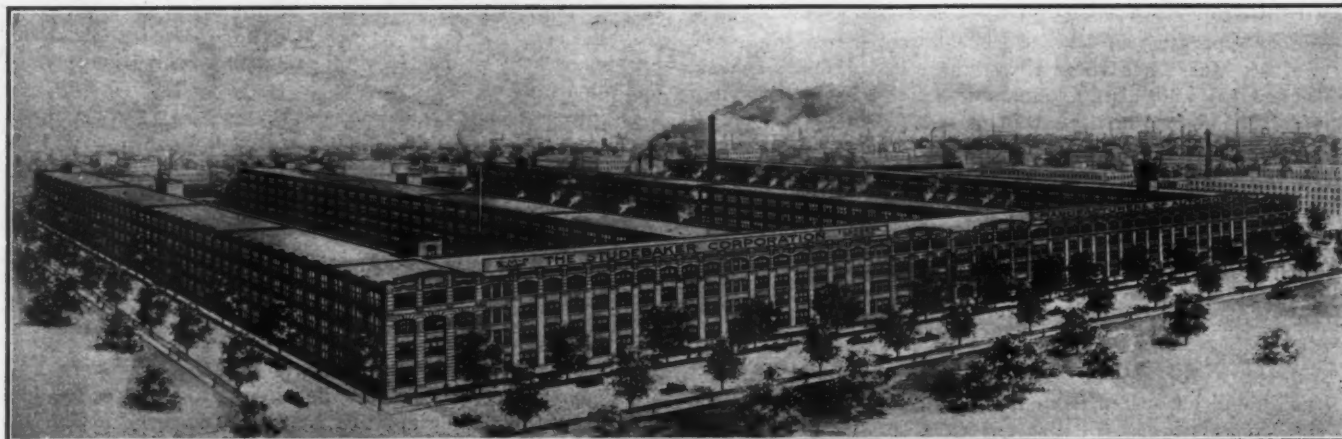
Atlanta Wants More Trucks—The city of Atlanta, Ga., which now owns close to a score of trucks, will soon be in the market for more. No definite appropriations have been made but the June appropriation sheet is likely to carry some and next January's is bound to. The water department has asked for a truck, the tax assessor has asked for a touring car, more garbage trucks are certain to be bought, to add to the present fleet and new automobile fire-fighting apparatus is needed.

Question Insurance Patrol Rights—The question of whether a fire insurance patrol has the same rights on the public streets as fire department, police and ambulance cars in Milwaukee is involved in the suit of the administrator of the estate of Louis Schultz against the Milwaukee Board of Fire Underwriters. The estate is suing for \$10,000 damages for the death of Schultz, who was killed by the fire insurance patrol car while riding a motorcycle. The jury at the first trial last week was unable to agree. The court stated that the rules of the road applying to the right of way of fire, police and ambulance cars applies only in part to the insurance patrol, but it was not stated wherein the application differs.



Krit delivery in use by a baking company in Cape Town

Factory Miscellany



Plant 1 of the Studebaker Corporation in Detroit, where E.M.F. cars are built. The company's headquarters are located in this building

STUDEBAKER Has Dozen Plants—The Studebaker Corporation's plants in Detroit, Mich., and vicinity now number an even dozen, plants 11 and 12 having been added as the result of recent building operations. Plants 1 and 3 are the largest, however, having over 13 acres of floor space out of the system's 33. The headquarters of the company are located in plant 1.

Rambler Factory in Vancouver—I. B. Hurd, Vancouver manager for the Rambler, announces that his firm intends to establish a branch factory there shortly.

Lafayette Company to Make Trucks—The Lafayette Motor Car Company, Easton, Pa., recently incorporated, has announced that it will manufacture automobile trucks.

Enterprise Company's New Building—The Enterprise Auto Machine Works, of Pontiac, Mich., has just completed the erection of a new factory building, with a thoroughly modern and up-to-date equipment. The company is composed of experts from foreign automobile plants.

New Motor Truck Company—A company has been formed at North Baltimore for the manufacture of an artistic design in motor trucks, with the following officers: President, John Wilt; vice-president, F. W. Spitler; treasurer, Bert Mong; secretary, Will Wirt; mechanical engineer, Park Campbell.

Electric Car Company Formed—Stockholders of the Century Electric Car Company held a meeting in Detroit, Mich., recently and formally organized the company, which is capitalized at \$80,000. Those chiefly interested are Paul Gray, Philip Breitmeyer, John Wynne, F. M. Aiken and William Merry.

Rowe Company May Move—Efforts are being made to move the plant of the Rowe Motor Company, Coatesville, Pa., to Lancaster and the present indications are that the removal will shortly be made. A number of prominent Lancaster business men are interested in the project, and several plants have been looked over in the northwestern part of the city.

Wheel Hub Factory for Albion—Jackson capital will establish a branch factory at Albion, Mich., for the manufacture of automobile wheel hubs. The factory will be operated in connection with the Albion Malleable Iron Works and the Hayes Wheel Company, of Jackson. At present the Hayes Wheel

Company is not making its own hubs, buying them instead from jobbers.

Finds Added Equipment Necessary—Despite its large plant, the Standard Roller Bearing Company, of Philadelphia, finds it impossible to keep abreast of orders, and owing to the increasing demand for its product, this company has recently purchased and installed over \$100,000 worth of additional machinery equipment to increase its facilities in this direction.

Robertson Organizes Own Company—W. Robertson has severed his connection with the Frontier Iron Works and has organized a new company under the laws of the state of New York to manufacture machine tool specialties. The new concern is capitalized at \$15,000 (\$12,000 paid in) and will operate under the name of the W. Robertson Machine & Foundry Company. W. Robertson is president and manager; T. J. Reed, vice-president; F. K. Keil, secretary, and F. M. Robertson, treasurer.

Canadian Body Company Organized—The organization of the Fisher Body Company, Ltd., of Canada has been perfected. The company has a capital stock of \$150,000 and has secured a 4-acre plot in Walkerville, Ont., on which it will erect at once a brick plant with a capacity of 100 bodies per day. It will manufacture both open and closed bodies of aluminum, steel and wood. It is expected that the plant will be in full operation by July 15 and it will be so constructed as to allow for future enlargement.

Parrish Company to Erect Plant—The Parrish Manufacturing Company, Reading, Pa., manufacturer of automobile frames, has decided to erect a large plant in Detroit. The company has secured a site on the outer belt line railway and plans for the factory are understood to be under way. It will be one of the largest frame-building plants in the country, giving employment to more than 1,000 men. It will be completely equipped. The slabs will be rolled there and every other process in the manufacture of frames will be carried out in this plant, from which the makers in Detroit, Cleveland, Buffalo and other centers in this territory will be supplied. The Reading plant will continue in operation, supplying Eastern factories.

Mack Works to Expand—The Mack Motor Car Works at Allentown, Pa., has bought 6 acres of ground for the purpose of enlarging its plant.

Establishes Vulcanizing Works—The Hub City Vulcanizing Works has been established at Sheboygan, Wis., by George N. Putnam and M. Bachanz.

Mercedes Factory in Niagara Falls—The Mercedes Motor Car Company, of Berlin, Germany, will shortly establish a branch automobile factory in Niagara Falls, N. Y. Employment will be afforded in the new plant for fifty men.

New Factory for Lamp Company—The C. M. Hall Company, Detroit, Mich., which makes automobile lamps, has had plans drawn for a new two-story brick factory to cost \$7,000.

King Working Night and Day—Since moving into its new factory, 1300 Jefferson avenue, East, Detroit, Mich., the King Motor Car Company has greatly increased its output and is now running both a night and day force.

Menominee Truck Maker Enlarges—The D. F. Poyer & Company, Menominee, Mich., has purchased the Gram Works building and will use it for factory purposes. The present quarters are entirely too small for the company's needs. The 1912 production is 300 cars and the company employs 100 men.

May Locate in Appleton—The Four Wheel Drive Automobile Company, Clintonville, Wis., which established a plant for the manufacture of the Zachow-Besserdich type of commercial and pleasure car, in which power is applied to all four wheels, finds it necessary to erect a new and larger plant and a dozen cities are bidding for the location. The present plant consists of the former machine and engine shops of the Zachow-Besserdich Company and has proven entirely inadequate to handle the business already on hand. Appleton, Wis., residents, of which are heavy backers of the corporation, seems likely to be the new location for the proposed works.

Tire Business is Booming—More tires are being turned out in Akron, O., than ever before in its history. For instance, the 1911 sales of the Goodyear Tire & Rubber Company increased over 500 per cent. over 1910 sales, and 1912 will greatly exceed even that larger percentage. In 1911 enough tires were turned out to equip 102,250 automobiles, and this year enough tires will be manufactured at this plant alone to equip 250,000 cars.

Hatfield Company to Expand—The Hatfield Automobile Company, manufacturing 1-ton and ½-ton trucks in Elmira, N. Y., is looking for a desirable location with a view to increasing its output. At the present time the company is turning out four cars a day.

New Automobile Agencies

Place	Car	Agent
Albany, N. Y.	McIntyre	McIntyre Auto Sales Co.
Algonquin, Ill.	Franklin	Joseph Cunat.
Auburndale, O.	Cutting	Thomas W. Bunnell.
Fresno and Bakersfield, Cal.	McIntyre	McKee & Scott.
Baltimore, Md.	Palmer Singer	Roy M. Upton.
Big Bend, Wash.	Hupmobile	W. R. Keys.
Boston, Mass.	McIntyre	Standard Motor Truck Co.
Boston, Mass.	King	S. J. Wise & Co.
Buffalo, N. Y.	McIntyre	Werick Bros. Motor Car Co.
Buffalo, N. Y.	Hupp	Henry Brunn.
Butte, Mont.	McIntyre	E. Wiley Hill.
Cedar Rapids, Iowa	King	Leslie M. Barton.
Charlestown, W. Va.	Maxwell	George W. Billmyer.
Chicago, Ill.	McIntyre	C. E. Swanson.
Coeur D'Alene, Idaho	Ford	Charles Perrault.
Connorsville, Ind.	McIntyre	George R. Beeson.
Cornell, Ill.	R. C. H.	J. H. Reichhardt.
Council Bluffs, Iowa	McIntyre	Bradley, Merriam & Smith.
Decatur, Ill.	R. C. H.	G. S. Wisegarver.
Freeborn, Minn.	R. C. H.	Fred Fiene.
Gloversville, N. Y.	McIntyre	J. August Schmidt.
Guelph, Ont.	Russell, Everitt and Hupmobile	Guelph Motor Car Co.
Hartford City, Ind.	McIntyre	Hartford City Auto Co.
Hartford, Conn.	McIntyre	McIntyre Commercial Car Co.
Huntington, Ind.	McIntyre	Shinkle, Richardson & Co.
Ithaca, N. Y.	McIntyre	D. F. Head.
La Crosse, Wis.	McIntyre	Fox Brothers.
Lancaster, Pa.	Havers	D. W. Ranck.
Masbach, Ill.	R. C. H.	Rudolf Dittmar.
Little Falls, N. Y.	McIntyre	F. B. Austin.
Memphis, Tenn.	McIntyre	F. A. Burmeister.
Milton, Pa.	Havers	George W. Slocum.
Minneapolis, Minn.	Waverley Electric	Jackson Garage.
Monmouth, Ill.	R. C. H.	Weir-Moore Motor Co.
Nashville, Tenn.	McIntyre	Imperial Motor Car Co.
New Berlin, Pa.	McIntyre	H. H. Maurer.
New York, N. Y.	McIntyre	B. B. Traub.
Oakland, Cal.	Oakland	Hugo Muller.
Oakland, Cal.	Regal, Kline	Frank Renstrum Co.
Ottawa, Ont.	Cutting	Victoria Garage.
Peoria, Ill.	McIntyre	Banta Brothers.
Philadelphia, Pa.	McIntyre	Lovegrove & Co.
Pomona, Cal.	R. C. H.	Clark's Garage.
Portland, Ore.	McIntyre	H. H. Thorpe.
Portland, Ore.	Oakland	Pacific Motor Co.
Raleigh, N. C.	R. C. H.	Capital Motor Car Co.
Richmond, Va.	King	Coleman Cutchins.
Riverside, Cal.	R. C. H.	Crescent Garage.
St. Louis, Mo.	McIntyre	Kingman Plow Co.
Schenectady, N. Y.	McIntyre	J. J. Aker.
South Whitley, Ind.	McIntyre	Owen M. Smith.
Springfield, Ill.	McIntyre	W. S. Crowder.
Stamford, Conn.	McIntyre	Mechaley Auto Company.
Toronto, Ont.	Warren	Brasier and Gourley.
Toronto, Ont.	Havers	Bouvier and Son.
Trenton, N. J.	American	Hanover Garage.
Tucson, Ariz.	R. C. H.	Alfred S. Conau.
Vancouver, B. C.	Havers	A. S. French Auto Co.
Washington, D. C.	Elmore	Charles Myers.
Washington, D. C.	Cole	G. R. Cowie.
Washington, D. C.	Lozier	Lozier Sales Co.
Webster, N. Y.	McIntyre	McIntyre Auto Sales Co.
York, Pa.	Stanley	C. E. Motter & Co.

Commercial Cars

Syracuse, N. Y.	Alco	F. P. Anderson.
Syracuse, N. Y.	International	W. H. Bissell.
Syracuse, N. Y.	Federal	James Auto Co.
Syracuse, N. Y.	Garford	Overland Syracuse Co.
Syracuse, N. Y.	Kelly	W. R. Shaw.
Syracuse, N. Y.	McIntyre	Syracuse-McIntyre Co.
Syracuse, N. Y.	Peerless	T. A. Young.



Studebaker Plant 3 in Detroit. This group of buildings comprises the assembly and machine shops where the Flanders 20 is made



**Cast Steel Wheel; Heavy Tire Casing; Rear Lamp for Interchangeable Light Source;
New Socket Wrench; Acetylene-Air Mixture Starter; Electric Extension
Light; Victor Garage Air Compressor**

Donahoe Steel Truss Wheel

AN elastic steel wheel, Fig. 1, for pleasure cars and trucks is made by the Donahoe Steel Truss Vehicle Wheel, 1190 Caxton Building, Chicago, Ill. In this wheel, hub, spokes and felloe are cast of one piece of low-carbon steel. The wheel has two sets of curved spokes running in opposite directions, each spoke crossing two other spokes between hub and felloe and thereby forming what is called by the maker the new-truss principle. This construction serves to distribute all strains fairly equally to all points where spokes are attached to the felloe, while the load is always carried by the hub, as in a wire wheel.

The hub of the wheel is constructed with an adjustable sleeve so as to fit any standard make of axle bearing. The sprocket wheel for driving the wheel used on a chain-driven rear axle is made integral with the internal-expanding brake drum and is secured to the wheel spokes, the brake drum lugs being bolted to the screw-tapped lugs at the points of intersection of the spokes. The wheel felloe is designed to take any standard type of clincher, demountable or solid-tire rim. The rims are attached to the felloe by means of bolts. The wheel is also furnished with projecting ridges on the outside of the felloe which prevent the skidding of the wheel in wet weather. The felloe is made in any shape and width to be used in connection with dual, flat or block tires.

The wheel is made in any required size between 24 and 72 inches diameter, the weights of these sizes varying from 50 to 300 pounds. A 37-inch wheel weighs 112 pounds and has a hub 3 1-2 inches in diameter. Its spokes vary in width from 2 inches at the hub to 1 3-8 inches at the felloe, and in thickness from 5-8 inch to 7-16 inch at these respective portions. The felloe is 3 inches wide and 1 1-8 inches thick. With 2 1-2 tons load applied at the outer surface of the rim and the wheel supported at the hub, horizontal and vertical deflection, measured from the hub to the rim, is .025 inch.



Fig. 1—Donahoe truss cast-steel wheel with solid tire. Fig. 2—Section of Knight pneumatic tire casing

Knight Pneumatic Rubber Tire

The Knight tire, made by the Knight Tire & Rubber Company, Canton, O., is illustrated by a photograph of its section, Fig. 2. The keynote in the construction of this product is strength, which is obtained by the use of a sufficient quantity of high-grade material and workmanship in its manufacture. The fabric consists of seven layers of sea island cotton fricated together by para rubber. Above this material is laid a stratum of highly elastic rubber forming a cushion C, and on top of this the two breaker strips are laid. The rubber tread portion is also of pure



Fig. 3—Sure Number rear light which is adaptable for use of oil, acetylene or electric lamp

up-river para and so heavy as to give a 5-inch casing a maximum thickness of 1 inch. To reinforce the fabric proper, a double strip of fabric is provided which runs along the full length of the bead of the tire.

Sure Number Rear Light Device

The Sure Number Lamp Company, 1800 Broadway, New York City, manufactures the tail light-number plate combination shown in Fig. 3. This device consists of a steel box one end of which is equipped with a red jewel behind which the tail lamp is placed, while the remainder of the length of the box is taken up by the number plate. The latter is specially prepared to be of use with this apparatus. The figures are painted on a heavy transparent pane, base and numbers being furnished in the colors demanded by the various state laws. The number plate is securely held in place by several clips and springs and may be replaced by another plate upon entering a different state. The light, which is held in position in the interior of the box, illuminates this space and thereby the transparent number plate. While the outfit is ordinarily furnished with an oil lamp, it may also be procured with an electric lamp or acetylene burner, or either one may be easily fitted in place of the oil lamp. The latter is removable, and while its base is fitted, in the case of any light, to the lamp box, this base is so designed as to carry an acetylene burner or serve as a socket holder for an electric bulb, while the passage for the stem of the wick-adjusting screw is so shaped as to also accommodate either the wire leading to an electric lamp or the tubing supplying acetylene to a burner.

Ray Socket Wrench Equipment

A new socket wrench outfit is manufactured by the Packer Auto Specialty Company, Old Colony building, Chicago, Ill. The wrench and its outfit, as well as a constructional view of the tool, are shown in Fig. 4. The wrench consists of a long pipe handle with a squared hollow end, into which the various sockets of the equipment fit. The steel handle is nickel plated and highly polished; it has a right-and-left-hand movement which is of the roller clutch type, insuring a positive grip if the wrench is turned in either direction. This mechanism is shown in detail in the lower right-hand illustration of Fig. 4. When the roller R bears against one side of the angular-topped plunger, the wrench handle has a strong, positive grip in that direction, while, if the knurled collar is slightly turned the other way, a grip in the opposite direction is obtained. The small outfit here illustrated contains twelve wrench sockets, but a larger outfit which comprises thirty-three sockets is also manufactured.

Crankless Acetylene Starter

A self-starting system claimed by its makers to operate 100 out of 100 times is the Crankless system, made by the Cox Brass Company of Albany, N. Y. The outfit consists of an ordinary starter in which an acetylene air mixture is conducted to the side of the intake manifold, and of an auxiliary starter by means of which the above-mentioned mixture may be injected

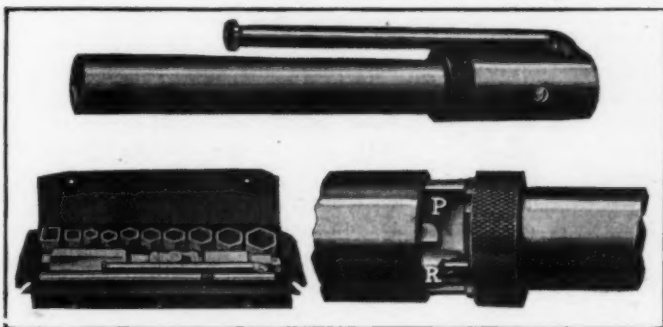


Fig. 4—Ray socket wrench, view of complete outfit and construction of roller-clutch movement

into the cylinder heads through suitable priming cups. The arrangement of the units of this system is shown in the side elevation and part section, Fig. 5. The gas, upon leaving the tank, passes through a two-way connection which divides it to the starter and to the lamps. The lead S conducts the acetylene to the distributor D_1 , which is fixed to the dashboard D. The gas enters the distributor through the connection C, flowing into its inner space, where it remains, being shut off from passage to the manifold by the cone-valve C_2 , which is held against its seat by a spring to insure permanent tightness. This cone-valve is attached to the end of a push rod carrying the pedal P which is held in position by the spring S_1 and which, if pressed, permits acetylene to flow to the manifold connection M, following the path indicated by arrows.

The distributor is so connected to the magneto that when the pedal P is pushed the current to the cylinders is short-circuited and at the same time acetylene is admitted as the cone-valve C_2 is opened. The motor, on its last few revolutions before stopping, sucks this gas into the cylinders and manifold and the suction also lifts the ball B so that air enters at A and is mixed with the acetylene; the sizes of acetylene and air passages are so proportioned that the mixture always contains 90 per cent. of air, which makes it perfectly combustible. As soon as the pedal is released, the motor is ready for starting by throwing on the spark.

Should the manifold lead fail to operate for one reason or another, the auxiliary starter comes into play. It operates in the following manner: While the pedal is pressed to permit acetylene to flow past C_2 , the driver pulls the handle of the

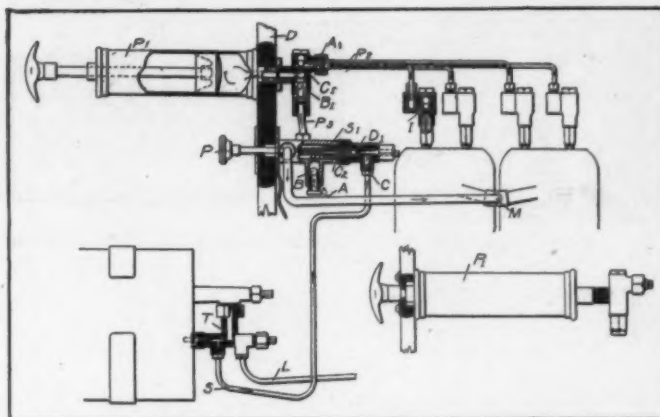


Fig. 5—Side elevation and part longitudinal section of crankless acetylene-air starter

pump P_1 toward him, sucking a 10 per cent. acetylene-in-air mixture into the auxiliary mechanism A_1 , whence it is injected into the cylinder heads through injectors I, the return of the mixture through pipe P_3 being prevented by the ball check B_1 . After this the system will start the motor, provided the ignition system is in operating order.

Automobile Extension Light

A handy extension-light outfit, Fig. 6, is made by the Flint Extension Light Company, Flint, Mich. The device consists of a 6-volt, 6-candlepower tungsten lamp equipped with 15 feet of lamp cord. The bulb and wire are ordinarily kept in a walnut and mahogany box which also contains a switch for connecting the lamp to, or disconnecting it from, the battery which is used as a source of current for the lamp. The lamp box may be placed anywhere on the car, but the dash is the place generally preferred. When closed the box is 6 1-2 inches long, 4 1-2 inches wide and 2 inches high.

Victor Garage Air Compressor

A double-acting air compressor for garage use is manufactured by the Victor Electric Company, Chicago, Ill. The compressor has a vertical cylinder on each side and a pulley in the center; it is designed for line-shaft drive. The bore of the compressor cylinders is 2 1-2 inches and the stroke 2 inches, the capacity 4 cubic feet of atmospheric air when the pulley works at 350 revolutions per minute. The maker claims that an air pressure of 135 pounds per square inch may be reached.

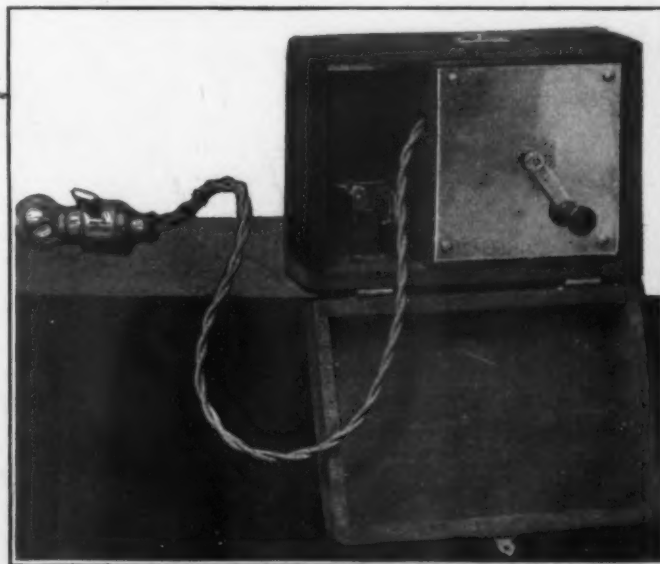


Fig. 6—Flint automobile extension light, showing bulb, cord and box which attaches to dash

Patents Gone to Issue

REVOLVING Lamp Support—In which the lamps swivel on a pivotally-mounted rod.

In the mechanism, Fig. 1, described in this patent there is a wheel which is pivotally mounted for steering purposes. A rod R is pivotally-mounted and has a non-circular section which is received by the longitudinal slot of a bar B, which is also pivotally-mounted. The rod R carries springs S which bear against opposite sides of the arm and a lamp is supported on the rod. Means are provided which swing the bar and thereby turn the rod as the above-mentioned wheel is steered to either side.

No. 1,025,966—to James B. Eastes, Konowa, Okla. Granted May 14, 1912; filed June 3, 1911.

Gas Mixer—A device for mixing air and gas before delivering them into the cylinders of an internal combustion motor.

This gas mixer, Fig. 2, comprises an outer shell in which there are a number of transverse partitions provided with apertures. At one end of the shell there is an inlet G for gas and one A for air, and at the other end an outlet M for the mixture. Into the aperture of the partition next to M is fitted a bell B which has a series of perforations in its cylindrical wall and opens in the direction of the flow of the mixture toward the outlet M. A cone-valve C which opens inwardly away from the air connection is secured to a valve stem S, which is also secured to the bell B. A valve disk D which is in alignment with the cone-valve and disposed away from it in the direction of the external air contains a ball bearing. An upwardly projecting rod R, which is threaded into the cone-valve and passes centrally through the bell, engages with one of its ends a milled adjusting rod R₁ whereby the distance between bell and cone-valve may be altered.

No. 1,026,135—to Rudolph J. Walther, Davenport, Ia. Granted May 14, 1912; filed December 28, 1911.

Spring Tire—In which a number of spring members are held spaced and in position by opposed annular portions.

This patent refers to a spring tire, Fig. 3, constructed on a wheel rim R which is engaged with an inclosing casing C. In

the casing are contained a number of spaced and bowed spring members S, holding the casing in distended position, the springs being held in position by opposed portions connecting their ends. In the edges of these opposed portions are notches which form slots when the portions are brought edge to edge. An overlying retaining plate P extends entirely around the rim; this plate has elongated slots through it which register with the slots in the opposed portions. T-bolts, the length of the heads of which exceed the width but not the length of the slots just mentioned, pass through the retaining plate, the opposed connecting portions and the rim.

No. 1,026,201—to George Burson, Winamac, Ind. Granted May 14, 1912; filed July 20, 1910.

Spring Vehicle—In which pneumatic cylinders are used for the suspension.

This patent refers to the use of running-stress transmitting linkage between the running gear and body of an automobile, Fig. 4. The linkage comprises radius link R. Lever links L, which are distinct from the linkage mentioned, are connected to body and running gear. One of the connections of each lever link is adapted to permit of the relative fore and aft component of the link movement. On the lever links pneumatic cylinders C are mounted at their lower ends.

No. 1,026,098—to Richard Liebau, Watervliet, N. Y. Granted May 14, 1912; filed July 27, 1910.

Tire Armor—Consisting of wire-like rectangles open on one side and interlinked with each other.

The tire armor referred to in this patent consists of links having a connecting portion and end portions extending at an angle from the connecting portion. Each link has its end bent pivotally around the connecting portions of adjacent links, the end portions having their terminals presented toward the longitudinal median line of the armor at each side thereof.

No. 1,025,285—to Charlie H. Maddox, Canton, O. Granted May 7, 1912; filed September 12, 1909.

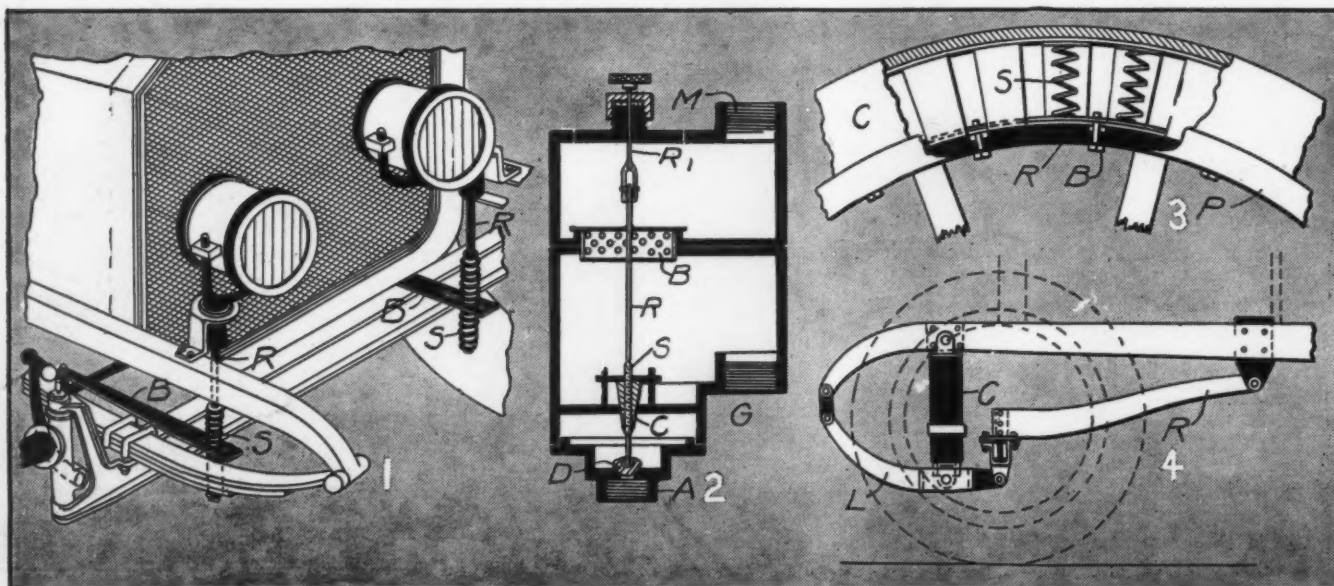


Fig. 1—Eastes lamp supports. Fig. 2—Walther gas mixer. Fig. 3—Burson spring tire. Fig. 4—Liebau spring suspension